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YOUR FAVORITE VEGAN AUTHORS



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eating & living

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FROM
BenBella Vegan



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Dallas, Texas

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e-ISBN: 978-1-941631-18-8

Cover design by Sarah Dombrowsky

Interior design by John Reinhardt Book Design

Distributed by Perseus Distribution

www.perseusdistribution.com

To place orders through Perseus Distribution:

Tel: (800) 343-4499

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INTRODUCTION

Dear Reader,

Thanks for downloading *BenBella's Best of Plant-Based Eating and Living!*

Chances are if you're reading this ebook, you're familiar with at least some of BenBella Books' plant-based line. Since 2005, when we first released T. Colin Campbell's classic, *The China Study*, we've been publishing high-quality, groundbreaking titles covering a broad range of subjects in the vegan landscape. Over the years our catalog of plant-based books has grown to include many more tasty titles, and we couldn't be more excited about our future offerings.

Here we bring you the best of BenBella's plant-based line—recipes and excerpts from both previously published top sellers and upcoming releases that we can't wait to share with you. You'll find three recipes each from some of our favorite cookbooks past and present, along with selections from our plant-based living titles that explore many facets of the field of the nutrition—from the science of vitamins and the dangers of a reductionist approach to food to the connection between disease and food and common misconceptions about the popular Paleo diet.

Whether you're new to BenBella or a longtime reader of our plant-based books, we hope you enjoy the offerings here and find new food worlds to discover. For news and updates, and to sign up for our newsletter featuring exclusive recipes, giveaways, and discount promotions, visit us at benbellavegan.com. We'd love to hear from you.

Happy reading and eating—

Heather Butterfield, Editor
Lindsay Marshall, Marketing Manager

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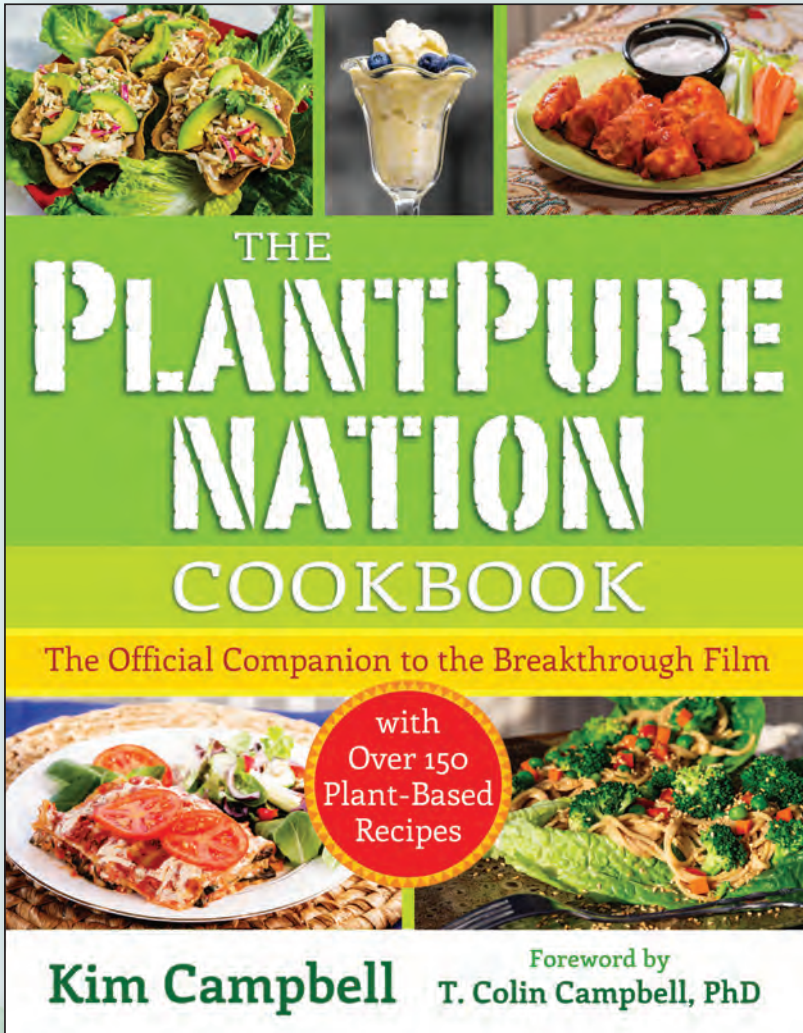
» PART ONE «

plant-based eating

» RECIPES FROM »

The Plant Pure Nation Cookbook

Kim Campbell



PORTOBELLO MUSHROOM AND BROCCOLI STIR-FRY

Portobello mushrooms give a meaty texture to this stir-fry. The hoisin sauce is a thick, spicy-sweet sauce made of soybeans. Serve over brown rice or quinoa.

½ cup water, divided
2 tablespoons low-sodium soy sauce
2 tablespoons hoisin sauce
2 teaspoons cornstarch
1 teaspoon agave nectar
6 ounces portobello mushrooms, sliced, with gills and stems removed
1 onion, thinly sliced
1 red bell pepper, seeded and sliced
6 ounces fresh broccoli florets

Yields: 4 servings

Prep Time: 15 minutes Cook Time: 10 minutes

- 1.** In a small bowl, combine ¼ cup of the water and the soy sauce, hoisin sauce, cornstarch, and agave; stir to combine. Set aside.
- 2.** Place the mushrooms, onion, and bell pepper into a nonstick skillet and add a small amount of water to prevent sticking. Sauté for 3 minutes.
- 3.** Add the broccoli and remaining ¼ cup water and cook for another 3–5 minutes, or until the vegetables are crisp-tender, stirring occasionally.
- 4.** Add the sauce and stir for another 2–3 minutes, or until bubbly and thickened.



CURRIED CARROT SOUP

This soup is light and creamy. I love the slight flavor of curry and the sweetness of the carrots blended with coconut milk.

1 onion, diced
4 cups low-sodium vegetable stock, divided
2 pounds carrots, sliced
1 tablespoon minced or finely grated fresh ginger
1 tablespoon curry powder
1 cup lite coconut milk
½ teaspoon sea salt

Yields: 6 servings

Prep Time: 10 minutes Cook Time: 45 minutes

- 1.** In a large saucepan over medium heat, sauté the onion in ¼ cup of the vegetable stock. Add the carrots, ginger, and remaining 3 ¾ cups vegetable stock and stir to combine.
- 2.** Cover and bring to a boil over medium-high heat. Reduce the heat to medium-low and cook until the carrots are tender.
- 3.** Remove from the heat and carefully transfer to a blender. You may have to do this in small batches. Use a pot holder to hold the lid down so the hot soup doesn't explode. Puree until smooth.
- 4.** Return the carrot soup back to the pot. Add the curry powder, coconut milk, and salt and cook over low heat for 5–10 minutes to bring the flavors together.



CHOCOLATE POWER BITES

These are no-bake cookies that I refer to as “bites” because I make them small. They are naturally sweet from the dates and loaded with chocolate and walnuts. They taste like you’re eating a candy bar without all the butter, sugar, and artificial flavors.

1 cup walnuts
1 cup pitted Medjool dates
¼ cup unsweetened cocoa powder
1 teaspoon vanilla or coconut extract
¼ cup unsweetened coconut flakes

Yields: 24 bites

Prep Time: 15 minutes Cook Time: 0 minutes

1. Line a 9 × 9 inch pan with parchment paper.
2. Place the all ingredients except coconut flakes into a food processor and blend until a thick dough forms.
3. Press the chocolate mixture into the prepared pan.
4. Refrigerate for 1 hour.
5. Cut into 24 bites and serve. Garnish the tops of the bites with coconut flakes.



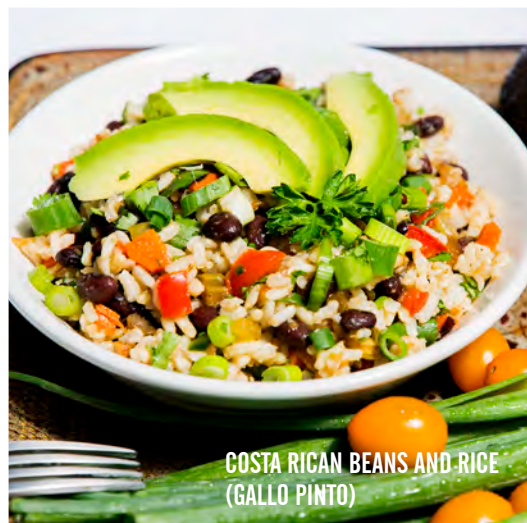
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BLUEBERRY MUFFIN GRANOLA



VANILLA-BERRY SMOOTHIE



COSTA RICAN BEANS AND RICE
(GALLO PINTO)

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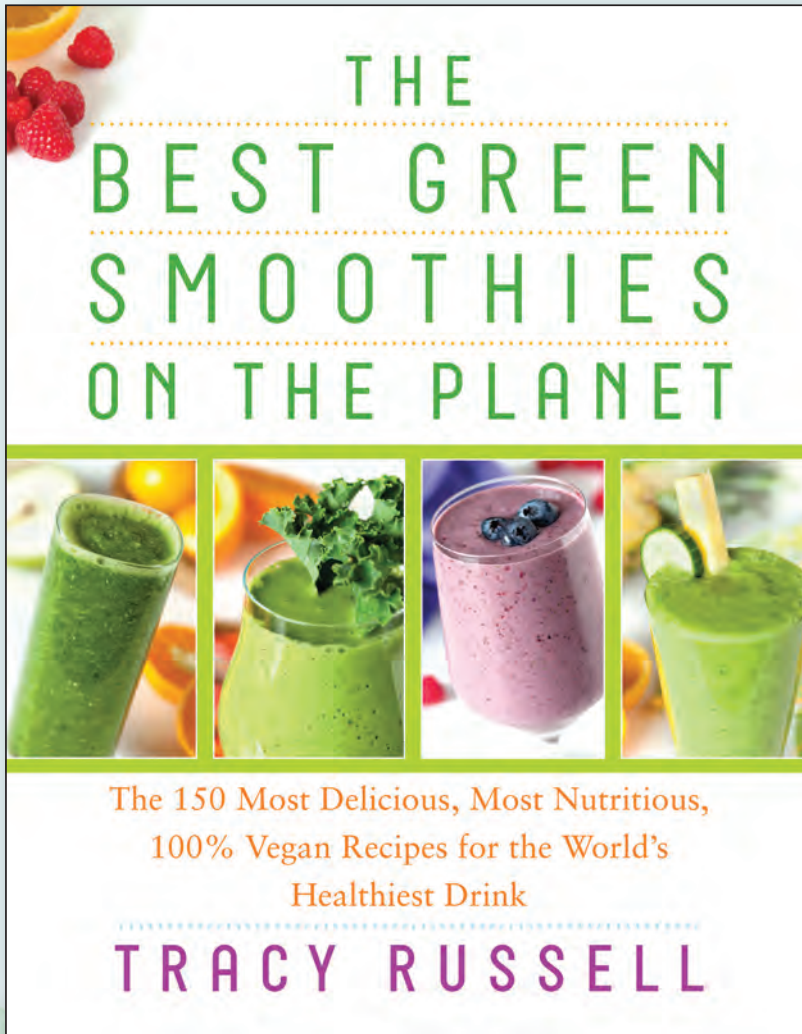
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» RECIPES FROM «

The Best Green Smoothies on the Planet

Tracy Russell



THE GREEN MACHINE

Parsley is another powerhouse green. It's loaded with iron and vitamins C and K. Just half a cup of parsley contains 1.9 mg of iron. Parsley is great for detoxifying your liver and kidneys. It has a distinctive flavor, however, so I recommend using a small amount. This recipe only calls for half a cup, but I have used one cup in some green smoothie recipes. I would not recommend using any more than one cup of parsley in a green smoothie.

INGREDIENTS

1/2 cup green grapes
1 small banana
1/2 cup flat-leaf parsley
1 cup fresh curly kale, stems removed
1 teaspoon ground flaxseeds
6 ounces filtered water

NUTRITION INFO

Calories: 180 • Fat: 3g • Protein: 8g
Carbs: 38g • Calcium: 21%
Iron: 4.2mg • Vitamin A: 114%
Vitamin C: 279%

SPICED BLUEBERRY AND PEAR SMOOTHIE

Adding spices to smoothies is a great way to add a lot of flavor without adding additional calories.

Frozen wild blueberries are a great low-calorie fruit that is loaded with 25 percent of your recommended daily value of fiber and 12 percent of your recommended daily value of zinc—with only 80 calories!

INGREDIENTS

1 medium pear, cored
1 cup frozen wild blueberries
1/4 teaspoon ground cinnamon
1/4 teaspoon ground nutmeg
4 ounces homemade almond milk

NUTRITION INFO

*Calories: 208 • Fat: 1g • Protein: 2g
Carbs: 49g • Calcium: 3%
Iron: 0.8mg • Vitamin A: 1%
Vitamin C: 29%*

PEACH-MANGO SMOOTHIE

Rainbow chard is such a great source of iron. Just three large leaves contain 2.6 mg of iron. They also contain 6 percent of your recommended daily value of calcium and almost 3 grams of protein!

I love how nicely the vanilla complements the peach in this smoothie. Peaches are one of my favorite stone fruits.

INGREDIENTS

1/2 mango, peeled and pitted
1 large peach, pitted
3 large rainbow chard leaves,
stems removed
Seeds scraped from 1/2 vanilla
bean or 1/4 teaspoon pure
vanilla extract (alcohol-free)
4 ounces homemade almond milk

NUTRITION INFO

*Calories: 293 • Fat: 1g • Protein: 9g
Carbs: 37g • Calcium: 8%
Iron: 3.1mg • Vitamin A: 75%
Vitamin C: 126%*

Love these smoothies and want more
from Tracy Russell?

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» RECIPES FROM «

Happy Herbivore Holidays & Gatherings

Lindsay S. Nixon



Cauliflower Hot Wings



SERVES 4 | Q | GF | SF | PA |

I saw “cauliflower hot wings” on a menu in LA and, intrigued, ordered a plate for the table. It was basically deep-fried cauliflower with oil and hot sauce, but the idea behind it stayed with me. I knew I could make a better, battered wing at home. It’s almost criminal that these wings are healthy. Every time I make ‘em, my friends start elbowing each other out of the way. Even my husband’s very omni guy friends start shoving their way to the table!

- 1 head cauliflower
- ½ c plain nondairy milk
- ½ c plus 1 tbsp chickpea flour
- 1 tbsp nutritional yeast
- few dashes of onion powder
- few dashes of garlic powder
- cayenne pepper, to taste
- dash or two of fine salt
- 1 tbsp plain vegan yogurt (see note)
- ½ c Frank’s RedHot Original Cayenne Pepper Sauce (not the wing sauce)
- agave nectar or honey, to taste (optional)

1. Preheat to 450°F.
2. Line cookie sheet with parchment paper.
3. Cut cauliflower into florets (think bite-size wing pieces) and set aside.
4. Whisk nondairy milk, flour, nutritional yeast, plus a few dashes of onion and garlic powder, cayenne pepper as desired, and a dash or two salt. Stir to mix (think thick pancake batter). **STOP**
5. Dip florets into batter, let excess drip off, and place on cookie sheet. (If your cauliflower

head is huge you may need to double the batter and wing sauce.)

6. Bake for 15 minutes, until golden and fork-tender.
7. Meanwhile, whisk yogurt with Frank’s and a few dashes of garlic powder. Add agave nectar or honey to taste if you want a sweet wing.
8. Once florets are finished baking, toss with hot sauce in a huge bowl and serve!

CHEF’S NOTES:

- I use low-fat, almond-based vegan yogurt in this recipe. Soy would also be a good option but I wouldn’t use coconut or rice-based vegan yogurts.
- Don’t have time to bake? An easier option for vegetable-based hot wings and dip is to mix hot sauce into plain vegan yogurt (I do slightly less than a 1:1 ratio) and serve with raw cauliflower and broccoli florets or tempeh strips for “wings.”

Per serving: 157 calories, 2.4g fat, 26.9g carbohydrates, 9.5g fiber, 71g sugars, 10g protein





White Bean Dill Dip

MAKES 1 CUP | **Q** | **GF** | **SF** | **PA** | **P** |

This is a terrific alternative to hummus. Serve as a party dip, as a crostini topper, or enjoy as a healthy snack with raw vegetables. The lemony-dill flavor makes it perfect for springtime!

1 15-oz can white beans, drained and rinsed
juice and zest of $\frac{1}{2}$ small lemon (about the
size of an egg)

1-2 garlic cloves, divided

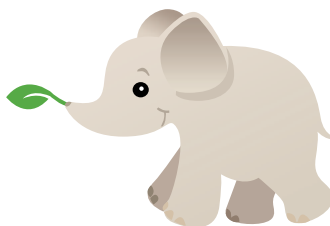
1-1½ tbsp Dijon mustard, divided
vegetable broth, as needed

$\frac{1}{4}$ - $\frac{1}{2}$ c fresh dill, divided
balsamic vinegar or smoked paprika for
garnish

1. In a food processor, combine beans, lemon juice, lemon zest, 1 garlic clove, and 1 tbsp Dijon and whiz until smooth, adding a splash or two vegetable broth if necessary to reach a thick “hummus” consistency.

2. Add 3 tbsp dill and pulse a few times to incorporate.
3. Taste, adding more dill to taste (dill varies in potency based on its freshness), plus more Dijon and/or garlic (if desired), plus a pinch of salt and a few dashes of black pepper. Pulse again.
4. Spoon into the center of a dish, cover with plastic wrap, and chill for 30 minutes or longer if you can (not necessary, but the flavor intensifies). **STOP**
5. Drizzle with balsamic or smoked paprika before serving.

Per serving (1 tbsp): 30 calories, 0.2g fat, 5g carbohydrates, 1.7g fiber, 0g sugars, 2g protein





Stuffed Artichokes

SERVES 4 | SF | PA | P |

I'm not going to lie: These artichokes do take a smidgen more work and effort (this a real fancy-pants recipe and not a pretend one like all the others in this book), but they're absolutely worth it! Serve with Golden Dressing as a dipping sauce. When I take these to a summer potluck, I feel like I've proven myself as a cookbook author.

juice of 1 lemon
4 artichokes
1¼ c vegetable broth
1 c whole-wheat couscous
½-¾ c minced fresh mint
¼-½ c minced fresh parsley
1 tsp mild curry powder
1 tsp onion powder
1 tsp garlic powder
3-4 tbsp vegetable broth

1. Fill a large bowl with water and fresh lemon juice and set aside but near your work area.
2. Cut stems off artichokes so they sit flat, then place into the lemon-water. One at a time, carefully use a serrated knife to cut off the top third of the artichoke, then use kitchen scissors to clip off and discard sharp leaf points, if any. Place back into the lemon-water.
3. Let artichokes soak while you fill a large pot with water, approximately 2 inches deep. Cover and bring to a boil.
4. Once boiling, add artichokes gently, cover, bring to a boil again, then reduce heat to low and steam until tender, about 25-40 minutes. (When the leaves pull out easily and the base is fork-tender, they're cooked.)
5. Drain well and set aside until they're cool enough to handle safely.
6. Meanwhile, bring 1¼ c vegetable broth (or water) to a boil. Once boiling, immediately add couscous and turn off heat. Couscous will absorb the water in minutes.
7. Fluff couscous with a fork then add mint, parsley, curry powder, onion powder, and garlic powder, plus a little vegetable broth to help everything incorporate. Stir to combine. Taste, adding more mint or parsley, if desired, plus salt and pepper to taste.
8. Once artichokes are cool, remove the center leaves and scoop out the hairy parts, then discard. **STOP**
9. Stuff the couscous into the center of the artichokes and in between all the leaves (I won't lie, this makes a mess).

Love these dishes and want more holiday favorites from Lindsay Nixon?



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YumUniverse

Heather Crosby



Almond-Cardamom Cream Chia Pudding *with* Fresh Berries



INGREDIENTS

½ cup chia seeds

Cardamom Cream

2 cups water

1 tablespoon almond butter

8 Deglet Noor dates, pitted

¼ teaspoon vanilla extract

½ teaspoon ground cardamom

Pinch sea salt

Toppings

1 cup of your favorite berries

Shredded coconut, toasted*

Hemp seeds*

2+ SERVINGS (PHOTO PREVIOUS PAGE)

This recipe is a staple in my kitchen—it's easy to prepare, full of beneficial nutrients, and it can be adapted with all sorts of fresh fruits, nuts, seeds, and other goodies. Try it for breakfast, as a snack, or as dessert.

STEPS

1. Place chia seeds in a large glass bowl.
2. In a blender, blend together Cardamom Cream ingredients until smooth and pour into bowl with chia. Stir well.
3. Cover chia mixture with a clean towel or lid, and allow to stand for 15 minutes—chia seeds will “plump” into pudding.
4. Once set, stir the pudding and spoon it into an adorable bowl. Top with fresh berries, coconut, and hemp seeds.

psst! This is also tasty unsweetened (without dates), especially if you use 2 cups of Thai coconut milk instead of the cream listed above.

—

Some folks like thicker chia pudding than others. If a batch is too thick for you, simply add more cardamom cream (or non-dairy milk or water). If it's too thin for you, add more chia seeds.

—

Substitute 5 Medjool dates for Deglets.

—

Make a “fruit pie” chia pudding parfait by layering this pudding with baked crumbled Pretty Pretty Pie Crust and warm fruit compote—yum!



Fig & Caramelized Onion Tart



INGREDIENTS

Crust

- 1 cup almond flour
- 1 cup all-purpose gluten-free flour
- 1 teaspoon sea salt
- 3 tablespoons coconut oil*
- 3 tablespoons cold water

Lemon Cashew Cheese

- 1 cup cashews, soaked
- ½ cup + 2 tablespoons water
- 2 teaspoons lemon juice
- 1 teaspoon apple cider vinegar
- 1 teaspoon lemon zest
- ¼ teaspoon sea salt

Filling

- 2 teaspoons coconut oil*
- 1 packed cup red onion, sliced thinly
- 1 tablespoon Sucanat
- 3–5 ripe figs (any kind), sliced thinly
- 1 tablespoon thyme leaves
- Pinch sea salt

psst! Before serving, drizzle Balsamic Reduction over a slice or two—yum.

6+ SERVINGS

The sweet, honey taste of fresh figs is magic when paired with caramelized onions and lemon cashew cheese. When it's not fig season, try using apples or pears instead.

STEPS

1. Preheat oven to 325°F and lay out two baking sheet-sized pieces of parchment paper on the counter.
2. With a fork, mix together crust ingredients until it crumbles and dough begins to stick together. Use your hands to form a ball and place it on one sheet of parchment paper. Place the other sheet of parchment on top and roll out until ¼" thickness. Peel back top parchment and use a knife, more rolling, and hands to sculpt a nice rectangle (or whatever shape you'd like) directly on the bottom sheet of parchment. Slide the parchment paper and crust onto a baking sheet.
3. Prebake crust for 10 minutes.
4. While the crust is baking, add all Lemon Cashew Cheese ingredients into the blender. Blend together until smooth. Set aside.
5. In a pan heated to medium-high, add coconut oil, onion, and Sucanat and stir often for 7 minutes, or until onion caramelizes and browns.
6. Once crust is removed from the oven, spread with Lemon Cashew Cheese and layer on onions and figs. Sprinkle with thyme and a pinch of sea salt.
7. Pop back in the oven and bake for 25 minutes.
8. Let tart cool on the baking sheet for about 7 minutes, slice, and serve warm or at room temperature.



Easy Vanilla Bean Ice Cream

8+ SERVINGS

At this point in the book, I hope you're looking at this recipe with confidence and creativity, thinking about all the goodies you can add to it or all the things you can add it to. Before freezing, fold in Sweet Cherry Rose Compote, or even the Granny Smith Apple Cobblers for an "Apple Pie Ice Cream." Warm a Dark Chocolate, Sweet Potato & Black Bean Brownie and make it à la mode with a scoop of this ice cream and some Hot Fudge Sauce. Or serve a scoop alongside some Chocolate & Salted Caramel Layer Cake. Want to try something unexpectedly delish? Top a bowl of this ice cream with fresh blueberries and/or strawberries and some Balsamic Reduction.

STEPS

1. Lay vanilla pod on a cutting board and press it flat with your fingers. Place your pointer finger at the top to hold in place, and using a sharp chef's knife, slice lengthwise from top to bottom, but only through the top layer of the pod if you can. Peel open and using the back of a butter knife, start at the top of the pod and scrape downward to collect the tiny, fragrant, tasty seeds. If you cut the pod all the way through, no problem, you just have to scrape twice. Tap seeds into a medium pot.
2. In a small bowl, take $\frac{1}{4}$ cup of coconut milk and whisk it together with arrowroot until well mixed. Transfer to the pot and add all remaining ingredients.
3. Cook over medium-high heat, stirring constantly until mixture comes to a boil. You may notice things are thickening. That's a great sign. Remove from heat and stir together for another 1 – 2 minutes.
4. Transfer to an airtight container and chill in the fridge overnight.
5. Pour chilled ice-cream base into the frozen bowl of your ice-cream maker and prepare according to manufacturer's instructions. No ice-cream maker? Pour into an airtight glass container. Freeze and enjoy.



INGREDIENTS

- 1 vanilla bean pod
- 2 14-oz. cans coconut milk (not reduced fat)
- 1 tablespoon arrowroot powder (optional)
- 3 tablespoons raw honey
- 1 tablespoon coconut oil
- $\frac{1}{4}$ teaspoon sea salt

psst! Easily use 2 teaspoons vanilla extract instead of vanilla bean.

Arrowroot powder is optional, but it's recommended because it helps create a nice, scoopable texture and minimizes ice crystals. Without it, ice cream is a little harder, but still delicious.

Either way, always thaw ice cream 10 – 15 minutes before serving.

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from Heather Crosby?



ROASTED BUTTERNUT SQUASH SOUP



HECK YEAH,
BANANA PANCAKES



SHREDDED BRUSSELS SPROUTS & KALE

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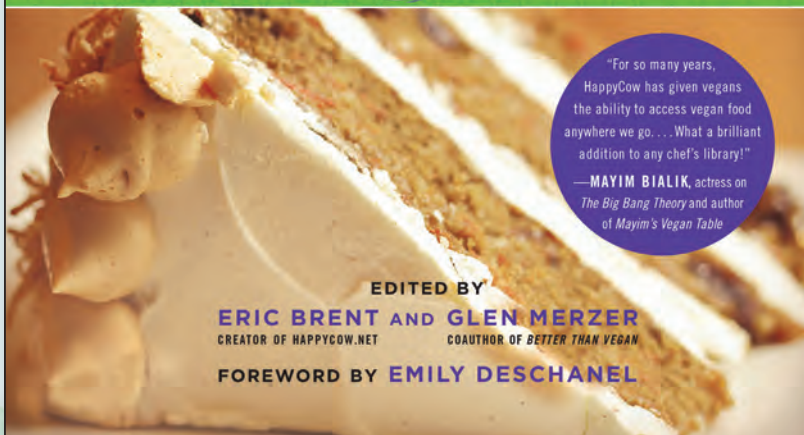
The HappyCow Cookbook

Edited by Eric Brent and Glen Merzer



THE HappyCow Cookbook

Recipes From Top-Rated
Vegan Restaurants Around the World



"For so many years,
HappyCow has given vegans
the ability to access vegan food
anywhere we go... What a brilliant
addition to any chef's library!"

—MAYIM BIALIK, actress on
The Big Bang Theory and author
of *Mayim's Vegan Table*

EDITED BY

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www.buddhaburgers.co.il



See HappyCow reviews at
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The principle of this burger is simple: include as many healthy and energizing ingredients as possible. Therefore, the base is sprouted lentils and quite a lot of flaxseed. All other ingredients are included for texture and taste.

Buddha Lentil Burger

Serves 8–10

- 2 *tablespoons olive oil (optional)*
- 1½ *cups minced white onion*
- 7 *cups sliced white mushrooms*
- ¾ *cup sliced celery stalks*
- 3 *cups sprouted green or black lentils*
- 1½ *cups minced toasted walnuts*
- 10 *garlic cloves, minced*
- ¼ *green jalapeño pepper, minced well**
- 1 *cup tomato paste*
- 1 *cup ground flaxseeds*
- 4 *tablespoons tahini mixed with 4 tablespoons water*
- 4 *tablespoons soy sauce***
- 30 *fresh basil leaves, minced*
- 1½ *teaspoons ground sea salt (or regular salt)*
- 1½ *teaspoons ground black pepper*

** Wear gloves when handling these peppers and never touch your eyes.*

*** For a gluten-free version of this recipe, use gluten-free soy sauce or Bragg Liquid Aminos.*

Preheat the oven to 375 degrees. Warm the olive oil in a pan and add the minced onion together with the mushrooms and the celery. Sauté for 5 minutes. Drain the vegetable mixture in a colander and press out all the juices and oil. Then put the mixture in a food processor together with the lentils and walnuts. Using a large food processor, work in batches. With the food processor half-full, pulse the ingredients for 5 to 8 seconds until it resembles the texture of ground beef.

Transfer the mixture out of the food processor and into a large bowl, and stir in the rest of the ingredients with a large spoon (or a mixer). Set aside and let it rest for 10 minutes so the ground flaxseeds can bind the mixture. The mixture should be soft and moist.

To make each patty, take about 5 heaping tablespoons of burger mixture and press it flat into a disc onto an oiled baking pan. Bake the patties at 375 degrees. After 10 minutes, flip the patties and rotate the pan around in the oven back to front (for even baking). Bake another 10 minutes. Remove and cool. The patties should be crunchy on the outside and softer on the inside.

Serve in a whole spelt bun with toppings, like our Béchamel “Cheese” (see recipe under Tofu Spinach Lasagna), a vegan Thousand Island dressing (vegan mayonnaise, ketchup, pickles, and dried onion), mustard, lettuce, tomato, red onion, or chives.

Tip: *The healthiest way to prepare these burgers is to dehydrate them rather than baking. After shaping the patties, place them in an oven at 115 degrees for 12 hours.*





G-Zen

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Tricolored Vegetable Pasta with Sun-Dried Marinara and Cashew Cheese

Serves 4

For the noodles:

- 3 medium beets
- 3 large carrots
- 3 medium zucchini

For the marinara:

- 2 cups sun-dried tomatoes in oil
- 2 cups diced tomatoes
- 1 cup pitted medjool dates
- 1 teaspoon fresh oregano
- 1 teaspoon fresh rosemary
- 1 cup fresh basil
- 2 cloves garlic
- Pinch black pepper, to taste
- Pinch Celtic sea salt, to taste
- Chili pepper flakes (optional)

For the cashew Parmesan cheese:

- 2 cups raw dried cashews (soaked 1 hour in water and drained)
- 1 teaspoon Celtic sea salt
- 1 tablespoon nutritional yeast powder

For the garnish (optional):

- Fresh or dried chopped basil
- Dried oregano

Equipment needed: spiralizer

For the noodles: Using a spiralizer, cut long noodlelike pieces from the beets, carrots, and zucchini. You can also use a vegetable peeler or the shredder attachment to a food processor to make shorter vegetable noodles. Set vegetable noodles aside.

For the marinara: Combine the ingredients in a food processor with the S blade. Pulse until you get a creamy marinara. Remove and set aside.

For the cashew Parmesan cheese: Place the raw cashews, sea salt, and nutritional yeast into the food processor with an S blade and pulse until it makes a Parmesan cheese texture.

To assemble: In a large mixing bowl, combine all vegetable noodles and sun-dried marinara and toss well until the vegetable pasta is well covered with sauce. Serve on a plate topped with plenty of cashew Parmesan to add a rich and cheesy flavor. Garnish your plate with basil and dried oregano.



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Fabulous Phở: Aulacese (Vietnamese) Traditional Soup

Serves 6–8

For the phở soup base:

- 3 pounds jicama
- 3 pounds daikon
- 2 Fuji apples (optional)
- 2 gallons filtered water
- ½ pound shallots
- 3 yellow onions
- ¼ cup sliced fresh ginger (see instructions on the next page for removing skin before slicing)
- ¼ cup rock sugar (optional)
- 2 bags phở seasoning (preferably Phở Hoa brand; each package includes 4 small bags)*
- 2 tablespoons vegan mushroom seasoning**
- 3 tablespoons sea salt
- 2 tablespoons sugar

To assemble:

- 4 ounces white wood-ear mushrooms (optional)
- ½ pound dried vegan soy protein***
- 3 slices fresh ginger
- 2 pounds fresh phở noodles*
- 4 to 8 slices vegan protein balls***
- 4 to 8 thin slices vegan ham***
- 1 6-ounce piece tofu, lightly fried and sliced (optional)
- 4 stalks green onions, finely chopped
- ½ yellow onion, thinly sliced
- 2 tablespoons extra-virgin olive oil or vegan butter
- ½ bunch fresh cilantro, chopped
- 1 pound bean sprouts
- Small bunch fresh Thai basil
- Hoisin sauce*
- Sriracha hot chili sauce*
- 1 lemon, cut into wedges

* Can be found at Asian grocery store.

** Chef's Wonder seasoning can be purchased at any Loving Hut.

*** Can be purchased online.

Wash the jicama, peel off the skin, and dice it into 1" cubes. Wash the daikon and dice it into 1" cubes. Wash the apples, if using, and dice them into 1" cubes. Place the jicama, daikon, and apples into a large stockpot. Make sure the pot is large enough to hold 3 gallons of water. Add 2 gallons of filtered water, turn the heat to high, and boil for at least 1 hour. Lower the heat and use a slotted spoon to take the cubes out.

While waiting for the soup base to boil again, use the open flame on the burner to burn the shallots, yellow onions, and ginger until the skin slightly blackens. (Use metal tongs, not your hands, to hold the vegetables.) Take out the vegetables and wash off the burned skin. You may use a knife to scrape the burned skin off more easily. Cut each yellow onion into 4 pieces. Slice ginger into thin slices. After the soup base has boiled for about 1 hour, set the heat to low and use a slotted spoon to take the vegetables out.

Add burned shallots, burned yellow onions, and burned ginger into the soup base. Add rock sugar to the soup base, if using. Add the phở spice bags into the soup base. Increase the heat to high and continue to boil the soup base for an additional 30 minutes. Add vegan mushroom seasoning, sea salt, and sugar into the soup base. Mix well. Adjust vegan seasoning, salt, and sugar

to your taste. Keep warm on the stovetop over low heat while serving, or store the soup base in the refrigerator for later use.

To assemble: If using the white wood-ear mushroom, soak the mushroom in tap water for 1 hour or until soft then cut in small blocks about 1 x 1. To prepare the dried vegan soy protein, boil water in a small pot, add a few slices fresh ginger, then add dried vegan soy protein and boil for about 3 to 5 minutes or until it becomes soft. Take it out and wash it with tap water twice and then hand-squeeze the soy "beef" to remove the excess water.

Use a small pot to boil about 8 cups of water. Take about 3 ounces of phở noodle, enough for 1 bowl, and place in a wire basket. Dip the noodles into the boiling water for about 20 seconds or until the phở noodle becomes soft. Place the phở noodles into a serving bowl. Add several pieces each of vegan soy protein, vegan protein ball, vegan ham, tofu, white wood-ear mushroom (if using), chopped green onions, and sliced yellow onions. Heat the soup base to boil and add several ladles of the base to the serving bowl. Add 1 teaspoon of olive oil or vegan butter. Add some chopped fresh cilantro, bean sprouts, fresh basil leaves, hoisin sauce, Sriracha sauce, and a wedge of lemon.

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PER TACO

Calories	152
Fat	1.4g
Carbs	28.4g
Fiber	5.8g
Sugars	3.7g
Protein	6.1g
WW Points	4

MAKES 6

- 1 15-oz can chickpeas, drained and rinsed
- chili powder
- 4 c shredded cabbage (green, red, or a combination)
- 1 tbsp Vegan Mayo or plain vegan yogurt
- 2–3 tbsp sweet red chili sauce, divided
- lime zest
- juice of 1 small lime
- sea salt (optional)
- 1–2 green onions, sliced
- Asian hot sauce (e.g., Sriracha; optional)
- 6 corn tortillas
- cilantro (optional)

thai tacos

My beloved chickpea tacos get reinvented with a little Thai flavoring and cool coleslaw. These tacos come together in a snap but present beautifully and are perfect in the summer when it's too hot to cook. The slaw is also great on its own as a side!

Mash chickpeas with a fork in a small bowl until they crumble. Sprinkle with chili powder as desired, stir, and sprinkle again to taste, then set aside. In another bowl, combine cabbage with mayo, 2 tbsp chili sauce, 1 tsp lime zest (about ½ of the small lime), and juice from 1 lime slice, and stir to combine. Taste, adding more chili sauce, lime juice, or zest as desired. I also like to add a pinch of sea salt. Stir in green onion, reserving some for garnish. (For a spicier dish, you can also add an Asian hot sauce like Sriracha to taste.) Spoon chickpea mixture into tortillas. Top with slaw. Garnish with a few green onions and cilantro leaves if using. Drizzle with extra hot sauce if desired (a little goes a long way; it's explosive!).



PER SERVING

Calories	262
Fat	1.5g
Carbs	48.4g
Fiber	22.5g
Sugars	6g
Protein	18g
WW Points	5

SERVES 2

- 1 onion, diced
- 4 garlic cloves, minced
- 1 tbsp chili powder
- 1 tsp ground cumin
- ½ c low-sodium vegetable broth
- ½ c pure pumpkin (canned)
- ¼ c diced green chilies (canned)
- 2 tbsp tomato paste
- 1 15-oz can kidney or black beans, drained and rinsed

pumpkin chili

I love serving this chili in sugar pumpkins during the fall. There is something about serving food in another food that's just cool. This chili is also one of the most popular and beloved recipes in our fall 7-Day Meal Plans, so I just had to include it in this book.

Line a skillet with a thin layer of water, and sauté onion and garlic until onion is translucent, about 2–3 minutes. Add chili powder and ground cumin, stirring to coat onion, and continue to cook until all liquid has cooked off. Add broth, pumpkin, green chilies, and tomato paste, stirring to combine. Add beans and stir. Reduce heat to low and cook until beans are warm. Taste, adding salt and pepper, plus more spices, if desired. If it's too thick, thin out with water or vegetable broth.

Chef's Note Black beans are a fine substitution for the kidney beans if that's all you have on hand.



UNDER
150
CALORIES

✓ SOY-FREE ✓ QUICK ✓ BUDGET ✓ SINGLE SERVING

microwave peach cobbler

After the success of the Mug Cake in *Everyday Happy Herbivore* I wondered if I could make a pie or cobbler in a mug in my microwave. Still working on the pie, but this cobbler rocks!

Place peaches in your mug and set aside for a few seconds to thaw peaches if they're frozen. In a small bowl, whisk flour, instant oats, rolled oats (if you want a slightly oat-y cobbler), brown sugar, and a few dashes of ground cinnamon (about $\frac{1}{8}$ tsp), and a light dash or two ground nutmeg, until combined. Then stir in nondairy milk. Place the oat mixture on top of the peaches and microwave 1–2 minutes, until the oat topping has cooked and looks a little like oat-meal. Top with yogurt and serve.

PER COBBLER

Calories	137
Fat	1.2g
Carbs	29.2g
Fiber	2.4g
Sugars	18.2g
Protein	3.4g
WW Points	4

SINGLE SERVING

- 1 peach, sliced (about $1\frac{1}{2}$ cups)
- 1 tbsp white whole-wheat flour
- 2 tbsp instant oats
- 1 tbsp rolled oats (optional)
- 1–2 tbsp brown sugar
- ground cinnamon
- ground nutmeg
- 1–2 tbsp nondairy milk (more with fresh peaches; frozen peaches are juicier)
- 1–2 tbsp vanilla vegan yogurt



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Del Sroufe with Glen Merzer



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Chef Del's Better Than Vegan

101 Favorite Low-Fat,
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Lose Over 200 Pounds



Del Sroufe

New York Times bestselling author of
Forks Over Knives—The Cookbook
and Co-Owner and Chef for Wellness Forum Foods
with Glen Merzer

Ajvar

(Serbian Red Pepper Spread)

SERVES 4 TO 6

I heard this recipe described on a public radio station one day and knew I had to try it. Every recipe I found had a large quantity of olive oil—so of course I got rid of that and added extra garlic and a little lemon zest to make the flavor pop. Serve this easy-to-make spread on crusty bread or as a filling for a wrap with mixed greens and sprouts.

1 large eggplant (about 1½ pounds)

4 large red bell peppers

4 cloves garlic, finely chopped

Zest and juice of 1 lemon

Sea salt and black pepper to taste

Preheat the oven to 475 degrees F. Place the eggplant and red bell peppers on a baking sheet and roast them until their skins blister and turn black, about 30 minutes.

Place the peppers in a plastic bag and let them sweat for 15 minutes. Let the eggplant cool, then cut it in half and scoop the flesh into a food





processor. Peel the blackened skin from the peppers, coarsely chop them, and add them to the bowl with the eggplant and the remaining ingredients. Pulse-chop the mixture until it resembles a chunky salsa. Serve at room temperature.

Sukiyaki

SERVES 4

Sukiyaki is a Japanese soup or stew usually made with meat, vegetables, and a broth made of soy sauce, mirin (a Japanese rice wine used in cooking), and sugar. I make it with brown rice noodles (though udon or soba are often used). It is one of my favorite noodle dishes and comes together quickly once all the ingredients are assembled. Most of the ingredients for this dish can be found in traditional grocery stores, though I sometimes have to go to my co-op or local natural foods store to find seitan.

8 ounces brown rice spaghetti

**1 leek, white part only, washed and thinly sliced
on the diagonal**

2 cups shiitake mushrooms, stems removed

3 cups mushroom or vegetable stock

**1 8-ounce package traditional-style seitan,
thinly sliced**

2 tablespoons brown rice syrup or agave nectar

¼ cup sake

2 tablespoons mirin



**¼ cup plus 2 tablespoons low-sodium soy sauce
or tamari**

1 bunch fresh spinach, coarsely chopped

Cook the pasta according to package instructions. Drain and set aside.

Sauté the leek and mushrooms in a large skillet over medium-high heat for 5 minutes. Add water 1 to 2 tablespoons at a time to keep the vegetables from sticking. Add the stock, seitan, syrup or agave nectar, sake, mirin, and soy sauce to the vegetables and mix well. Bring the mixture to a boil and add the spinach and noodles.

Balsamic-Glazed Brussels Sprouts

SERVES 4

Brussels sprouts are one of my favorite vegetables. I eat them steamed and seasoned with salt, pepper, and nutritional yeast, or, as in this recipe, glazed with balsamic vinegar.

**1½ pounds brussels sprouts (about 6 cups),
trimmed and halved**

1 large yellow onion, diced

1 cup balsamic vinegar, reduced to ½ cup (see note)

¼ cup brown rice syrup

Sea salt and black pepper to taste

Steam the brussels sprouts until tender, about 10 minutes. While they steam, sauté the onion in a large skillet over medium heat for 10 minutes, until it is well browned. Add water 1 to 2 tablespoons at a time to keep them from sticking. Add the steamed brussels sprouts, balsamic vinegar reduction, and syrup, and mix well. Cook for 3 to 4 minutes. Season with salt and pepper.





Chef's Note • To reduce the balsamic vinegar, place it in a small saucepan over medium heat and cook it until it is reduced to $\frac{1}{2}$ cup.

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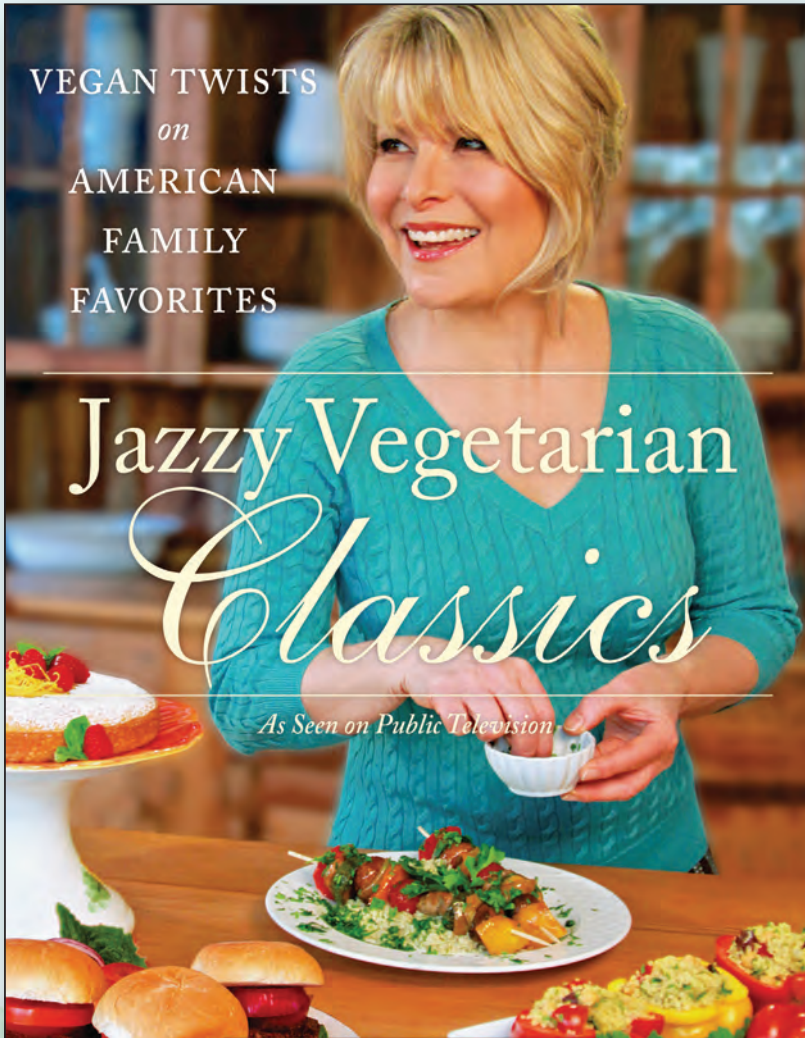
Jazzy Vegetarian Classics

Laura Theodore

VEGAN TWISTS
on
AMERICAN
FAMILY
FAVORITES

Jazzy Vegetarian Classics

As Seen on Public Television



Party Potato Skins

[MAKES 3 TO 6 SERVINGS] [NUT FREE] My husband kept asking, “Why don’t you make jazzy potato skins? Everyone will love them!” Let’s face it, husbands aren’t always right, but this time his suggestion was fabulous. These snazzy spuds make the perfect appetizer, light lunch, or jazzy snack.

- 3 very large russet potatoes, scrubbed, baked, and cooled (see note)
- 1 teaspoon regular or smoked paprika
- 2 cups diced cremini mushroom caps
- 1 cup (about 1 medium) diced sweet red pepper
- 1 cup lightly packed, finely chopped baby spinach
- 1/3 cup minced onion
- 2 teaspoons all-purpose seasoning
- 1 teaspoon reduced-sodium tamari
- 1 teaspoon extra-virgin olive oil, plus more as needed
- 1 cup shredded vegan cheddar-style cheese (optional)

CHEF'S NOTE

The russet potatoes may be baked up to 24 to 36 hours in advance of preparing this recipe. After they have cooled, wrap them tightly in foil and store them in the refrigerator until use.

Preheat the oven to 375 degrees F. Line a large, rimmed baking sheet with unbleached parchment paper.

Slice each potato in half lengthwise. Carefully scoop out the pulp, using a teaspoon or grapefruit spoon, leaving about 1/4 inch of the potato skin intact. (Reserve the pulp for another use.) Arrange the skins on the prepared baking sheet. Sprinkle the skins with 1/2 teaspoon paprika.

To make the filling, put the mushrooms, sweet pepper, spinach, onion, all-purpose seasoning, tamari, olive oil, and the remaining 1/2 teaspoon paprika in a medium bowl and stir until evenly coated. If the mixture seems dry, add a bit more olive oil.

Spoon one-sixth of the filling into each skin. Tent with foil and bake 35 to 40 minutes until the vegetables are soft. Remove the foil and bake 10 to 15 minutes. Add the vegan cheese (if using) and bake 10 minutes or until the vegan cheese is melted and the edges of the potatoes are crisp and golden. Put the potatoes on a large platter and cool for 5 to 10 minutes before serving.

To serve as an entrée, serve 2 to 3 skins per person. To serve as an appetizer course, serve 1 skin per person, cutting each skin into 3 to 4 slices right before serving.



Chickpea and Quinoa Salad in Sweet Pepper Boats

[MAKES 8 SERVINGS] [NUT FREE] These appealing pepper “boats” are filling enough to serve as a main dish for any festive summer meal. Perfectly portable, too, they make a wonderful picnic entrée.

- 1 cup quinoa, rinsed thoroughly and drained
- 2 cups filtered or spring water
- 1 can (15 ounces) chickpeas (garbanzo beans), drained and rinsed
- ½ cup chopped fresh flat-leaf parsley
- 1 pint grape or cherry tomatoes, halved
- ¾ cup kalamata olives, pitted and sliced
- 1 teaspoon lemon zest
- 2 tablespoons freshly squeezed lemon juice
- 1 tablespoon extra-virgin olive oil, plus more as needed
- 1 clove garlic, minced
- ½ teaspoon chili powder, plus more as needed
- ¼ teaspoon sea salt, plus more as needed
- ¼ teaspoon turmeric
- 4 large sweet red, yellow, or orange peppers
- Chopped fresh flat-leaf parsley, for garnish (optional)

Put the quinoa and water in a medium sauce pan and bring to a boil over medium heat. Decrease the heat to medium-low, cover, and simmer for 15 to 17 minutes, until all of the liquid is absorbed. Fluff with a fork. Transfer to a medium bowl. Let cool (see note).

Put the cooled quinoa, chickpeas, parsley, tomatoes, and olives in a large bowl. Put the lemon zest, lemon juice, olive oil, garlic, chili powder, salt, and turmeric in a small bowl and whisk briskly until smooth. Pour the dressing over the quinoa mixture and stir gently to incorporate. Taste and add more chili powder, salt, and/or olive oil if needed. Cover and refrigerate for 2 hours to let the flavors blend. Right before serving, split the peppers in half lengthwise and seed them. Scoop the quinoa mixture into the pepper halves. Garnish with parsley, if using.

CHEF'S NOTE

The quinoa may be cooked up to 24 hours in advance and stored in the refrigerator.



Zucchini-Orange Cupcakes with Vanilla Cream Cheese Frosting

[MAKES 6 GIANT CUPCAKES] [NUT FREE] It's cupcake time! In this mouthwatering baked treat, orange juice stands in for nondairy milk, and shredded zucchini adds moisture and volume. If you serve the cupcakes sans the vegan frosting, these tasty delights make a great low-fat breakfast muffin or afternoon snack. Add the frosting and they make a "once-in-a-while" confection that will surely please any hard-core cupcake fan!

FROSTING

8 ounces vegan cream cheese
4 tablespoons vegan margarine
½ cup vegan confectioners' sugar,
plus more as needed
1½ teaspoons vanilla extract

CUPCAKES

2 cups whole-wheat flour
2 teaspoons baking soda
½ teaspoon baking powder
⅓ cup brown sugar
1 cup grated zucchini, drained
½ cup dried cherries
1¼ cups freshly squeezed
or refrigerated store-bought
orange juice
1 tablespoon orange zest, for garnish

Preheat the oven to 375 degrees F. Line a 6-cup standard muffin tin with paper liners.

To make the frosting, put the vegan cream cheese, vegan margarine, confectioners' sugar, and vanilla extract in a medium bowl and stir vigorously until smooth and well blended. Taste and add more sugar, up to 1 tablespoon, if desired. Cover and refrigerate for 1 to 3 hours.

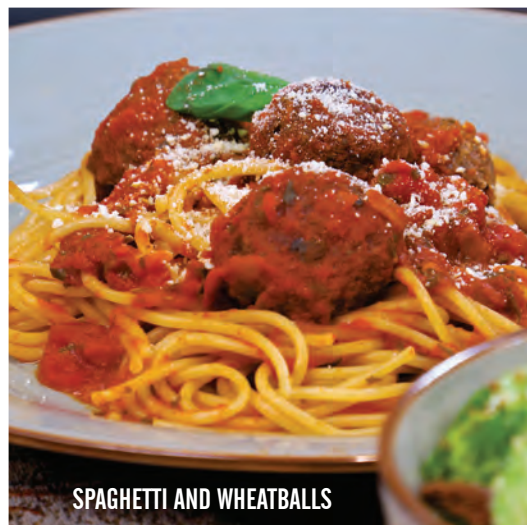
To make the cupcakes, put the flour, baking soda, and baking powder in a large bowl and stir with a whisk to combine. Add the brown sugar and whisk to combine. Stir in the zucchini and cherries. Add the orange juice and mix just until incorporated. Don't overmix or the cupcakes will be tough. Mound the mixture into the prepared tin. Put the pan on a baking sheet and bake for 30 to 35 minutes, or until golden and a toothpick inserted in the middle of a cupcake comes out clean. Put the pan on a wire rack. Cool for 10 minutes. Carefully remove the cupcakes from the muffin tin, and place them on the wire rack. Let the cupcakes cool completely.



Spoon or pipe a generous amount of frosting on top of each cupcake. Top with some orange zest, placed artfully in the center of the frosting. Covered tightly and

stored in the refrigerator, leftover cupcakes will keep for about 2 days. Serve chilled or at room temperature.

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LeAnne Campbell, PhD

FOREWORD BY
T. COLIN CAMPBELL, PHD

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— THE —

CHINA STUDY COOKBOOK

—

LEANNE CAMPBELL, PHD

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OVER 120
WHOLE FOOD, PLANT-BASED RECIPES



BLACK-EYED PEA SALAD

PREPARATION TIME: 15 minutes | **CHILLING TIME:** 1–2 hours

MAKES 8 SERVINGS    

FOR THE SALAD

- 1 15-ounce can black-eyed peas, rinsed and drained
- 2 cups cooked brown rice
- 2 green onions, sliced
- 1 green bell pepper, diced
- 1 celery stalk, diced
- 2 small tomatoes, diced
- 1 tablespoon finely chopped fresh parsley

FOR THE DRESSING

- 4 tablespoons lemon juice
- 1 tablespoon light soy sauce
- ¼ teaspoon brown mustard
- ¼ teaspoon maple syrup
- 2 cloves garlic, minced

- 1 | Combine the peas, rice, green onions, green pepper, celery, tomatoes, and parsley in a large bowl.
- 2 | Mix lemon juice, soy sauce, mustard, maple syrup, and garlic in a small bowl.
- 3 | Pour dressing over the salad and toss to mix. Chill 1–2 hours if time permits.

TIPS

This salad will keep in the refrigerator for several days and is perfect when you need a quick snack or meal.

For added color and variety, or to add interest to second-day leftovers, add 1 cup of fresh or frozen corn kernels and/or a sweet green or red pepper, chopped.

You can also use cooked fresh, frozen, or dried black-eyed peas in place of the canned peas (use 2 cups).



GARLIC GREEN BEANS AND MUSHROOMS

PREPARATION TIME: 20 minutes | **COOKING TIME:** 15–20 minutes

MAKES 4 SERVINGS  

1 pound green beans
1 pound mushrooms
2 tablespoons vegetable broth
1 teaspoon sesame seeds

6 cloves garlic, minced
2 tablespoons tamari
Salt, to taste

- 1 | Rinse the beans, trim the ends, and break into 1-inch pieces. Steam over boiling water until tender, 7–10 minutes.
- 2 | Rinse and slice the mushrooms.
- 3 | Heat vegetable broth in a skillet over medium heat. Add sesame seeds and garlic, and sauté for 2 minutes.
- 4 | Stir in the tamari. Add the mushrooms and cooked beans. Season with salt.
- 5 | Cook 3–5 minutes, then transfer to a serving dish.

TIPS

The papery skins on garlic can be easily removed using a chef's knife. Lay the flat edge of the blade on top of the garlic clove and press down firmly with the palm of your hand. You should hear a slight cracking sound as the skin breaks. Then it can be easily peeled from the clove.

My mother likes green beans with tarragon. When adding tarragon to this recipe, do not add tamari or sesame seeds.



CHOCOLATE BANANA PIE

PREPARATION TIME: 15 minutes | CHILLING TIME: 2 hours

MAKES 8 SERVINGS    

¼ cup cocoa powder

½ cup Sucanat

1 cup almond milk

1 teaspoon vanilla extract

6–8 tablespoons (organic) cornstarch mixed with

1 cup almond milk

2 medium bananas, sliced

1 recipe G-Mom's Nutty Pie Crust (p. 258)

¼ cup crushed nuts

1 | In a saucepan, add cocoa, Sucanat, and milk. Bring to a boil. Add vanilla and cornstarch mixture. Reduce heat and simmer gently for 3 minutes, stirring constantly.

2 | Layer sliced bananas on bottom of prepared pie crust. Pour mixture over bananas and smooth the top. Sprinkle with crushed nuts.

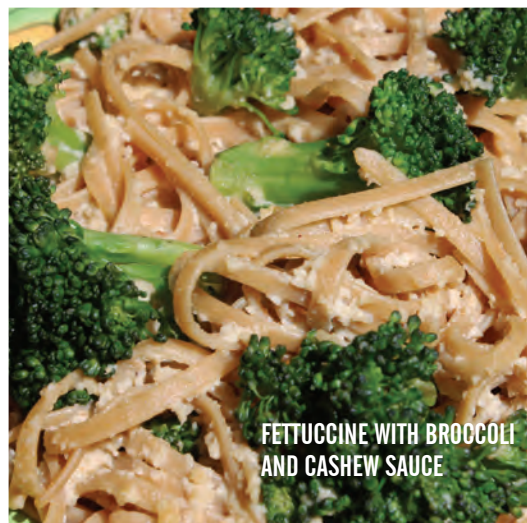
3 | Refrigerate until firm and cold, about 2 hours.

TIP

12 ounces of semisweet (dairy-free) dark chocolate chips can be used in place of cocoa, sweetener, and the sweetener-cornstarch mixture.



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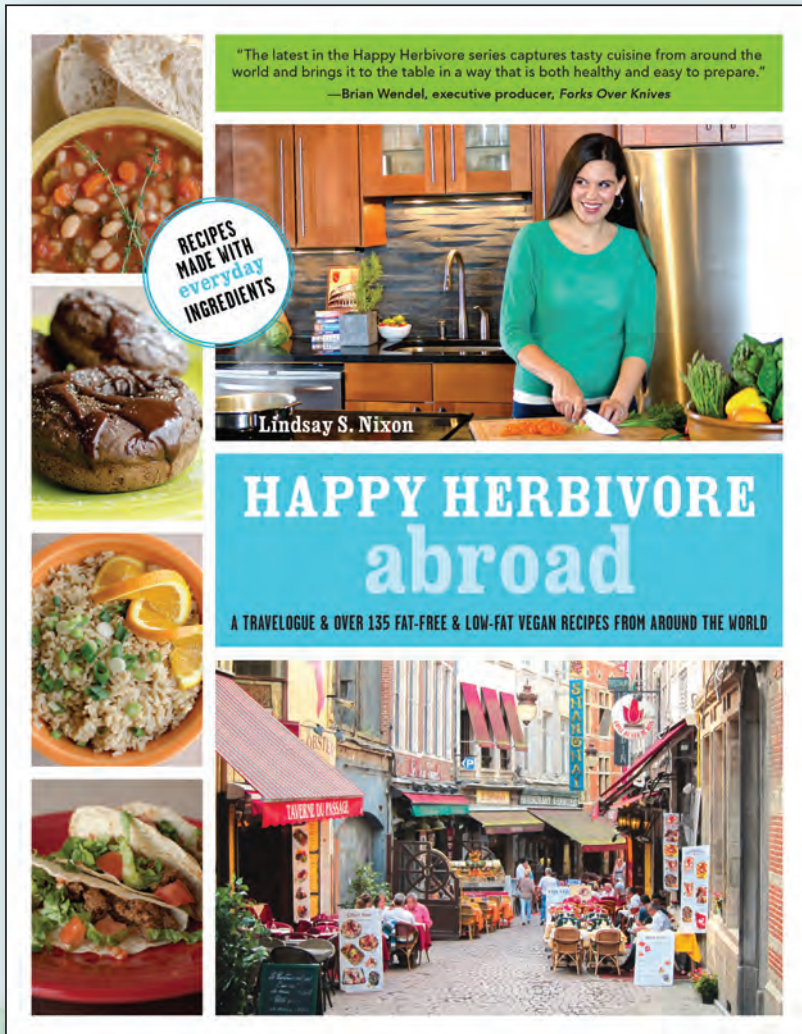
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Happy Herbivore Abroad

Lindsay S. Nixon



quick chili mole



PRONUNCIATION TIP

Mole in Spanish sounds like “mo-lay.”



I discovered Mexican mole sauce far too late in life. For that reason, I’m trying to pull the key flavors together in all sorts of fusion dishes—like this quick and easy chili! To extend this dish, add canned pinto beans (drained and rinsed) and/or corn.

Sauté onions and garlic in a thin layer of broth over high heat until onions are translucent, about 2–3 minutes. Reduce to medium heat and add remaining broth, refried beans, cumin, chipotle powder, cocoa, and tomatoes with their juices, stirring to combine. Reduce heat to low and warm thoroughly, about 5–7 minutes. Once warm, taste, adding more chipotle powder if you want more heat (be careful—a little goes a long way!). You can also add more cocoa, if desired, but too much cocoa can leave a chalky taste. If you choose to add more chipotle powder or cocoa, add each in $\frac{1}{4}$ -tsp increments. Garnish with sliced green onions and a lime wedge, if desired. If you go spicy with extra chipotle, plain vegan yogurt or Sour Cream makes a nice garnish.

SERVES 3

- 1 c vegetable broth
- 1 small onion, diced
- 4 garlic cloves, minced
- 1 c refried beans
- $\frac{1}{2}$ tsp ground cumin
- $\frac{1}{4}$ tsp chipotle powder
- 4 tsp unsweetened cocoa
- 1 14-oz can diced tomatoes, undrained
- green onions (optional)
- lime wedges (garnish)

Chef’s Note Mole sauce is the generic term for a number of different sauces in Mexican cuisine, but outside of Mexico, “mole sauce” typically refers to mole poblano, a dark, rich sauce containing cocoa (though the sauce itself isn’t chocolaty). See my recipe for Quick Mole Sauce.

PER SERVING

Calories 134, Total Fat 1.5g,
Carbohydrates 26.1g, Fiber 8g,
Sugars 6.1g, Protein 6.8g



Mediterranean Chard

You know what I love about Mediterranean cuisine? Olives. Olives are one of the few foods I feast on when I travel, and every time I eat them fresh in the Mediterranean, I fall a little more in love. This dish celebrates the olive! For a full meal, add chickpeas.



Line skillet with a thin layer of vegetable broth, and sauté garlic and a pinch of red pepper flakes over high heat for a minute or two, until the garlic is golden in color, fragrant, and most of the broth has cooked off. Add enough broth to line the skillet again, then add capers and olives. Sauté for a few seconds, then add greens. Stir to combine and continue to cook, using tongs or a spatula to stir the greens around, incorporating them with the other ingredients and to help cook them down. Once greens are dark in color and softer, about 2–3 minutes, turn off heat. Add lemon zest and stir to combine before serving.

PER SERVING
(WITH 3 CUPS CHARD)

Calories 57, Total Fat 2.6g,
Carbohydrates 8.3g, Fiber 2g,
Sugar 0.3g, Protein 2g

SERVES 2

vegetable broth,
as needed
8 garlic cloves, minced
red pepper flakes
2 tsp capers
1/3 c olives, sliced thin
2–3 c chard, chopped
1 tsp lemon (zest)

Chef's Note Feel free to scale back the garlic, particularly if you have bigger cloves. I love the strong taste of garlic in this dish, but if you're not a garlic lover, 8 cloves might be overpowering.

Chef's Note While any olive will do here, kalamata olives are best.



blueberry bundt cake



PRONUNCIATION TIP

Bundkuchen sounds like “boondt-ku-hun” and *Gugelhupf* sounds like “google-hopf.”

The English word “bundt” is derived from the German *Bundkuchen*, also called *Gugelhupf*, a ring-shaped cake originating in southern Germany, Austria, and Switzerland.

Preheat oven to 350°F. Grease a bundt pan and set aside. In a mixing bowl, combine flour, baking powder, baking soda, and sugar. Add nondairy milk and applesauce, then stir until just combined. Stir in blueberries. Pour batter into prepared pan and bake 25–40 minutes, until a toothpick inserted in the middle comes out clean. Meanwhile, make icing. In a small bowl, whisk powdered sugar with orange juice, zest, and nondairy milk as necessary until a runny glaze forms. Spoon glaze over warm cake and let run down the sides.

PER SERVING

PER SLICE (NO ICING) Calories 112, Total Fat 0.6g, Carbohydrates 25g, Fiber 2.4g, Sugars 10.7g, Protein 2.8g

ICING (PER TBSP) Calories 60, Total Fat 0g, Carbohydrates 15.2g, Fiber 0g, Sugars 14.7g, Protein 0g



SERVES 12

- 2 c white whole-wheat flour
- 1 tsp baking powder
- ½ tsp baking soda
- ½ c raw sugar
- 1 c nondairy milk
- ¼ c unsweetened applesauce
- 1 c frozen blueberries

ICING

- 1 c powdered sugar
- 1 tsp orange juice
- 1 tbs orange zest
- nondairy milk, as needed

Chef’s Note If you don’t have a bundt pan, a square 8- or 9-inch pan will work, but you will need to adjust baking time accordingly.



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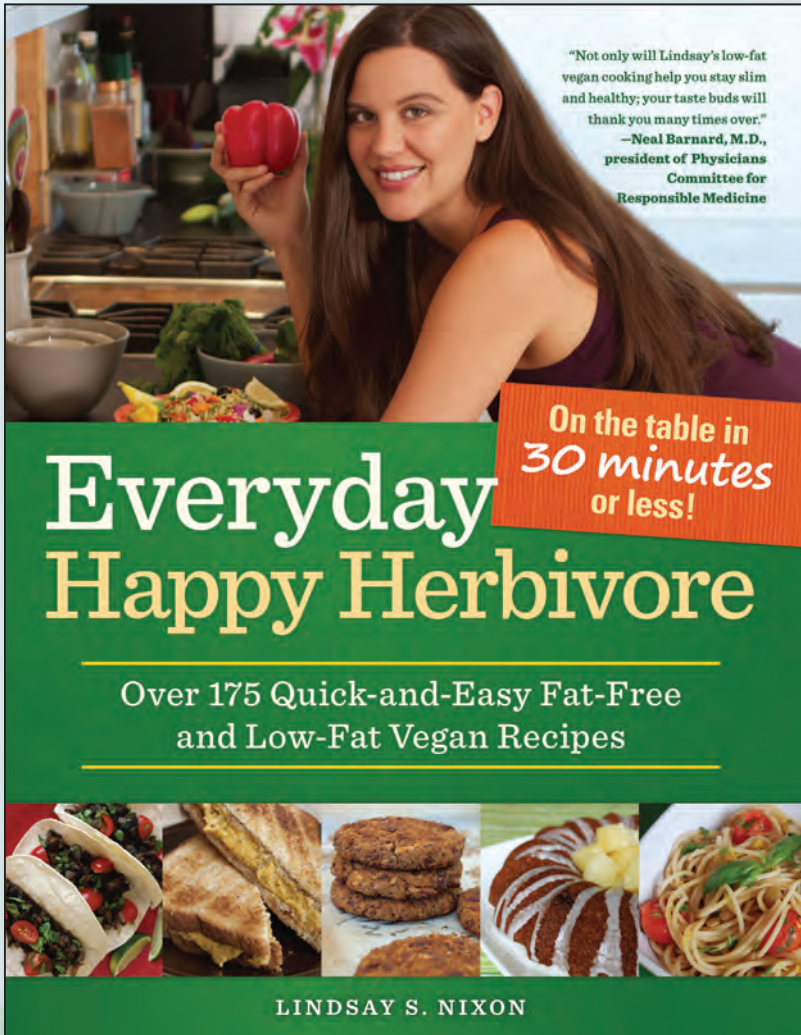
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» RECIPES FROM »

Everyday Happy Herbivore

Lindsay S. Nixon





Harvest Cornbread **30** **F** **S** **\$**

Serves 9 | In the middle of making my classic cornbread recipe I realized I was out of applesauce, so I subbed pumpkin. I figured I'd add sage and anise while I was at it and the result was extra-delicious. Cornbread with a little fall flavoring!

1 c white whole-wheat
flour
1 c cornmeal
1 tbsp baking powder
½ tsp salt
1 to 2 tbsp minced fresh
sage
1 c nondairy milk
¼ c canned pure pumpkin
¼ c agave nectar
2 tbsp raw sugar
(optional)
pinch of ground anise
(optional)

- 1 Preheat oven to 400°F.
- 2 Grease a standard 9-inch bread pan, 8-inch square baking pan, or shallow pie dish, and set aside.
- 3 In a large mixing bowl, whisk flour, cornmeal, baking powder, and salt together until well combined.
- 4 Add sage, nondairy milk, pumpkin puree, agave nectar, plus optional sugar and anise, and stir until combined.
- 5 Pour batter into prepared pan and bake for 20 minutes, or until a toothpick inserted in the center comes out clean and the bread is firm to the touch.

CHEF'S NOTE: If you want a strong pumpkin flavor, add several dashes of pumpkin pie spice.

NUTRITIONAL INFORMATION 🌿 136 Calories, 0.8g Fat, 30.3g Carbohydrates, 2.7g Fiber, 9.9g Sugars, 3.9g Protein






Everything Minestrone

Serves 8 | This is a terrific end-of-the-week recipe when you need to clean out your fridge before the next shopping trip, because you could really add anything to it. It also has that slowly-simmered-all-day taste even though it comes together quickly. I typically use carrots, zucchini, and yellow squash, but use whatever you have on hand.

1 small onion, diced
4 garlic cloves, minced
3 c sliced/chopped
vegetables
red pepper flakes
(optional)
1 tbsp Italian seasoning
2 c vegetable broth
1 tbsp red wine vinegar
1 8-oz can tomato sauce
1 14-oz can diced tomatoes
1 15-oz can white beans
(optional)
salt and pepper, to taste

- 1 Line a large pot with a thin layer of water and sauté onion, garlic, and a pinch of red pepper flakes (if using) for a minute.
- 2 Add Italian seasoning and continue to cook until fragrant, about 1 minute. Add all remaining ingredients, including choice vegetables, except beans, salt, and pepper, and stir to combine.
- 3 Bring to a boil then cover, reduce heat to low, and simmer until vegetables are tender, about 10 to 20 minutes.
- 4 Add beans, if using, cooked rice, or pasta (see Chef's Note), and continue to cook until thoroughly warm.
- 5 Add salt and pepper to taste and serve.

CHEF'S NOTE: Fire-roasted tomatoes are especially good here, and feel free to substitute leftover cooked pasta or rice for the optional beans—or use all three!

NUTRITIONAL INFORMATION (1 C; JUST VEGETABLES, WITHOUT RICE, BEANS, OR PASTA)  60 Calories, 0.9g Fat, 11.5g Carbohydrates, 4.7g Fiber, 3g Sugars, 2.3g Protein





Cherry Quinoa Salad 30 G S 🕒 \$

Serves 2 | Cherries add a nice, natural sweetness to this salad so it doesn't need any dressing. It's one of my favorite light summertime meals and it's very filling. Apple slices and chopped raw walnuts also make a nice addition. This salad serves two as a meal or four as a side.

1 c water
¼ c dried cherries
½ c quinoa
4 c baby spinach
1 c chickpeas
1 cucumber, cut in half
lengthwise, then sliced
dried cherries, for garnish
juice of 1 or more lemon
wedges

CHEF'S NOTE:

I like to use red quinoa here so the color of the quinoa visually matches the cherry taste. However, regular (white) quinoa may be substituted.

- 1 Bring water to a boil.
- 2 Once boiling add cherries, cover, turn off heat, and let sit for 10 minutes.
- 3 After 10 minutes the water should take on a pink hue, some of the cherries should be floating, and all of them should look bloated.
- 4 Transfer to a blender and whiz until smooth (a few cherry bits are okay). Look at the markings on your blender to make sure you have 1 cup of liquid, but if not, add a little more water. if you have more than 1 cup, drain excess off.
- 5 Return to saucepan and add quinoa, stirring to combine.
- 6 Bring to a boil and once boiling, reduce heat to low and simmer until water has cooked off, about 15 minutes.
- 7 Meanwhile, toss spinach with remaining ingredients and plate.
- 8 Sprinkle with quinoa (warm or chilled) and squeeze lemon juice over the top.

Make Ahead 🌿 Soak the cherries in water overnight or all day while you're at work and skip the boiling process. You can also make the quinoa ahead to save time, or make the entire salad, mixing all the components together, refrigerating and later serving chilled.

NUTRITIONAL INFORMATION 🌿 531 Calories, 8g Fat, 95.1g Carbohydrates, 20.1g Fiber, 20.8g Sugars, 24.3g Protein

CHEF'S NOTE: I generally use cherry-juice-infused Craisins here since dried cherries are not available in St. Maarten, but any dried cherry that looks like a raisin (and is not the big, plump, tart variety) should work here. Pomegranate Craisins are also a good substitution.



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Blissful Bites

Christy Morgan

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Blissful Bites

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Christy Morgan

a taste of india artichoke dip

G  **45** • Makes 4 to 6 servings

This appetizer is an efficient way to use leftover beans and great for a party for any occasion. It's full of Indian spices and ginger, but I wouldn't say it's hot. It's mild to medium, so if you want it spicier, feel free to add a touch of cayenne to it.

1 can (14 ounces) artichoke hearts, drained
1½ cups cooked chickpeas, or 1 can (15 ounces) drained and rinsed
1 tablespoon mirin
1 tablespoon brown rice vinegar or apple cider vinegar
2 teaspoons maple syrup
2 tablespoons tamari
2 teaspoons garam masala
1 teaspoon ginger, grated
Sea salt, pinch
Nutritional yeast, for topping (optional)
Baguette, sliced

Place all the dip ingredients in a food processor and blend until all the ingredients are well combined and no chunks remain. Be sure to scrape down the edges of the bowl a few times to incorporate all the ingredients.

Transfer to a serving bowl and sprinkle nutritional yeast on top. Toast baguette and serve with dip.

blissful definitions

Mirin is Japanese cooking wine that is slightly sweet and has a low alcohol content. It's great to use as a substitute for cooking wine or sherry. I also use it in sauces, dressing, glazes, and dishes like this dip to add depth.

Brown rice vinegar is made from cultured brown rice, making it a healthier choice than regular rice vinegar. It has a nicer flavor as well. It can be found at any natural food store, but feel free to substitute another vinegar if you can't find it.

asian rice paper rolls with almond bliss dipping sauce

G **△** **45** • **CHEF FAVE**

The amount of fillings you need to cut depends on how many rolls you want. These rolls don't keep long once made, so make only what you need. Don't overstuff them; you want them no more than two inches in diameter.

Rice paper for soft rolls
Warm water

your favorite fillings

**Thin rice noodles, cooked according to
package instructions**

Napa cabbage and red cabbage, thinly sliced

Carrots, matchsticks

Basil, cilantro, mint

Bean sprouts

Pan-fried tofu or tempeh

Fruit (such as a mango, peach, or pear), sliced

Ripe avocado, sliced

almond bliss dipping sauce

makes about ½ cup

⅓ cup unsalted creamy almond butter

3 tablespoons tamari

3 tablespoons brown rice vinegar

2 tablespoons maple or brown rice syrup

1 teaspoon grated ginger

**¼ cup filtered water, as necessary, to obtain
desired consistency**

Prepare your spring roll station by getting all your equipment ready, including a bowl of water for dipping the rice paper in, a plate or cutting board to roll on, and a platter to put your finished rolls on.

Start by dipping the entire piece of rice paper in the water, then pulling it out right away (do not leave it sitting in water; it will soften up more as you work). Lay the rice paper on the plate and layer in ingredients toward the bottom side closest to you in the middle, leaving a couple of inches clear on either side of the veggies. Start rolling, holding the filling in place as you make a tight roll; be sure to tuck in sides near the beginning. Roll all the way up and set on a platter. Repeat until all ingredients are used.

Whisk together sauce ingredients until well combined.

blissful variation

Use *peanut sauce* for a dipping sauce.





lemon-roasted asparagus

G S 45 • Makes 3 to 5 servings

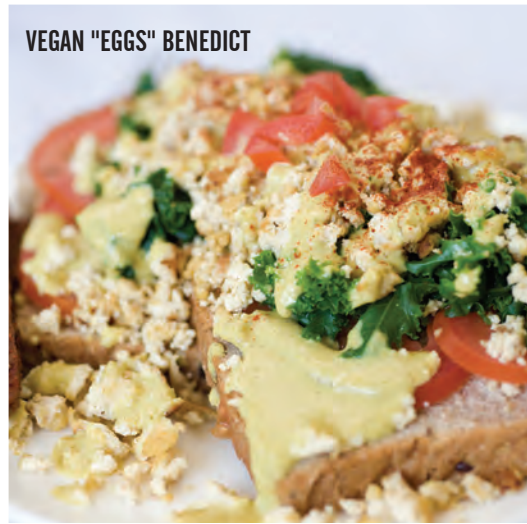
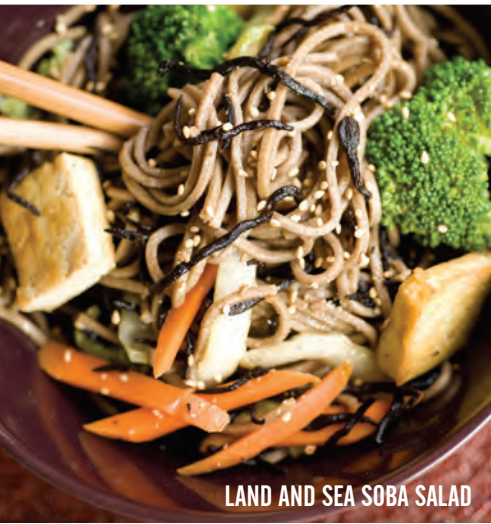
Fresh lemon is paired with asparagus and fresh oregano for a spring or summer side dish. Since it cooks so quickly, your oven won't need to be on for long.

1 pound fresh asparagus, woody ends trimmed
2 tablespoons lemon, sliced very thin,
seeds removed

1 tablespoon olive oil
2 tablespoons fresh oregano, chopped
½ teaspoon fennel seeds
½ teaspoon sea salt
½ teaspoon black pepper

Preheat oven to 450 degrees F. Combine all the ingredients in a medium bowl, making sure to completely coat all the asparagus spears with oil. Spread out evenly on a rimmed baking sheet. Roast, shaking the pan occasionally to toss, until the asparagus is tender-crisp, about 12 minutes.

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The Happy Herbivore Cookbook

Lindsay S. Nixon

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LINDSAY S. NIXON



Cinnamon Buns



Serves 6 | Pictured opposite | I love cinnamon buns. There is something bewitching about sugar and cinnamon gooeyness that I can't deny! One weekend I dared to wonder if I could make vegan cinnamon buns that were whole-wheat and fat-free. Turns out I can. Dare to dream, my friends, dare to dream.

¼ c non-dairy milk
2¼ tsp active yeast
3 c whole-wheat pastry flour
1 tbsp baking powder
¼ c raw sugar
2 tsp ground cinnamon, divided
¼ tsp fine salt
5 tbsp unsweetened applesauce
4 tbsp brown sugar
2 tbsp raisins (optional)
1 c confectioners' sugar
1 tsp non-dairy milk

- 1 Preheat oven to 350°F. Grease or spray a round 8-inch cake pan and set aside.
- 2 Gently warm non-dairy milk to approximately 110°F. Sprinkle yeast in and let it dissolve, about 5 minutes.
- 3 Meanwhile, whisk 2 cups of flour in a mixing bowl with baking powder, sugar, 1 tsp cinnamon, and salt.
- 4 Stir in applesauce and non-dairy milk mixture, using a spatula to combine, then stir in ½ cup of flour.
- 5 Stir in remaining flour and knead in the mixing bowl 15 to 20 times until elastic and not excessively sticky.
- 6 Flour a rolling pin and roll dough out into a large, thin rectangle.
- 7 In a small bowl, combine brown sugar, raisins, if using, and remaining cinnamon. Spoon and spread this mix around the center of the dough, leaving 1-inch edge clear.
- 8 Gently but tightly roll the dough up. Using a string, pizza cutter or sharp knife, cut roll into six equal pieces.
- 9 Place buns in the prepared pan; a tight fit is okay.
- 10 Bake for 25 minutes, until slightly golden and thoroughly cooked.
- 11 While baking, prepare icing by mixing confectioners' sugar with non-dairy milk until a thin glaze forms.
- 12 Drizzle icing over the buns while they're still warm.

NUTRITIONAL INFORMATION  Calories **385**; Calories from Fat **12**; Total Fat **1.4g**; Cholesterol **0mg**; Total Carbohydrate **85.4g**; Dietary Fiber **7.2g**; Sugars **37.6g**; Protein **7.5g**





Hawaiian Chickpea Teriyaki

Serves 2 | Pictured opposite | This is my vegan spin on Hawaiian barbecue. In Hawaii, meats are commonly marinated in teriyaki sauce before grilling and, lucky for us, the salty and spicy teriyaki also goes perfectly with the nutty flavor of chickpeas. Plus the fresh sweetness of the pineapple salsa adds another dimension you just can't beat.

1 15-oz can chickpeas,
drained and rinsed
¼ c teriyaki sauce
1 tbsp Szechuan sauce or
hot sauce (optional)
1 tbsp raw sugar (optional)
2 c cooked brown rice (or
cooked greens)
pineapple and/or mango
salsa (see Chef's Note)

- 1 Combine chickpeas, teriyaki sauce, Szechuan sauce, and sugar in a large frying pan.
- 2 Allow to marinate for at least 5 minutes.
- 3 Cook over medium heat, stirring regularly, until most of the liquid has absorbed, about 10 minutes.
- 4 Spoon over cooked rice and top with salsa. (For a lighter dish, you can substitute cooked greens, such as steamed kale, for the rice.)

CHEF'S NOTE: *If you want to create your own pineapple and mango salsa, mix equal parts chopped pineapple and mango with minced red onion, fresh cilantro, and lime juice to taste.*

NUTRITIONAL INFORMATION  Calories **505**; Calories from Fat **30**; Total Fat **3.4g**;
Cholesterol **0mg**; Total Carbohydrate **99.4g**; Dietary Fiber **12.8g**; Sugars **15.0g**; Protein **19.1g**





Baked Onion Rings

Makes 30 to 40 rings | Pictured opposite | I daresay I like these better than the greasy, deep-fried kind.



1 large Vidalia onion
½ c Breadcrumbs
½ c yellow cornmeal
1 tsp fine salt
1 tsp granulated onion powder
1 tsp granulated garlic powder
½ c chickpea flour
½ c non-dairy milk
salt, as needed

VARIATIONS

Herbed Onion Rings

  Add 2 tsp of Italian seasoning.

Texan Onion Rings

  Add 1 tsp of cayenne powder, or to taste.

- 1 Preheat oven 400°F.
- 2 Grease a large baking sheet or line with parchment paper and set aside.
- 3 Cut onion into ½-inch-thick rings, reserving all large and medium rings, about 30 to 40 rings, and store the smaller pieces for another use.
- 4 Grind down Breadcrumbs and cornmeal in mortar and pestle into a fine sand-like consistency.
- 5 Whisk Breadcrumb/cornmeal mixture, salt, and spices together in a bowl and set aside.
- 6 Pour chickpea flour in another bowl and non-dairy milk in a third bowl.
- 7 Place the bowls together in a triangle, with the non-dairy milk bowl pointing at you in the center.
- 8 Fully dip a ring in the non-dairy milk, twirl it in chickpea flour until coated, then quickly dip back into the non-dairy milk and immediately dredge in crumb mixture until evenly coated.
- 9 Place on cookie sheet and repeat with all rings.
- 10 Bake for 10 to 15 minutes until crisp and golden with a few light-brown spots on the edges, careful not to overcook or burn.
- 11 Sprinkle with salt and serve fresh out of the oven when the onions are still soft.

NUTRITIONAL INFORMATION (PER SERVING: ABOUT 5 TO 7 RINGS)

Calories 88; Calories from Fat 10; Total Fat 1.1g; Total Carbohydrate 16.3g; Dietary Fiber 1.9g; Sugars 2.3g; Protein 3.4g



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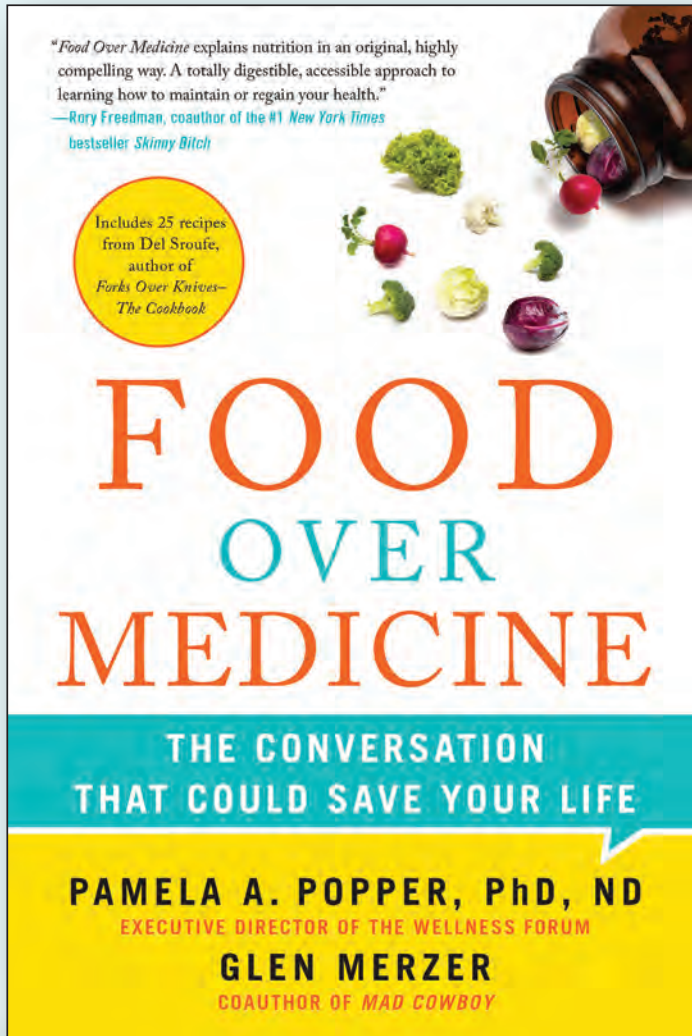
» PART TWO «

plant-based living

» FROM *FOOD OVER MEDICINE* «

Diseases and the Foods That Bring Them On

Pamela A. Popper, PhD, ND and Glen Merzer



DISEASES AND THE FOODS THAT BRING THEM ON

.....

GM: Pam, here's my nearly all-inclusive list of the various causes of diseases: diet and lifestyle, the environment, genes, stress, psychological factors, and pathogens. Let's review the many maladies plaguing our population and examine the cause for each. Let's start with heart disease.

PP: Definitely diet and lifestyle.

GM: Does genetics play any role?

PP: With very few people. I can say the same with regard to any condition that we would label chronic and degenerative. You have genetic predisposition, but those genes are switched on by diet and lifestyle choices. You're going to have, in any practice

setting, 2 to 3 percent of the population whose cholesterol levels, no matter how much they clean up their diet and lifestyle, won't get down to ideal levels. Or perhaps they're salt-sensitive and an adjustment in salt intake is needed to get their blood pressure down, and sometimes even that doesn't work. We see a very tiny percentage of people who honestly have been dealt a bad hand. But the good news is that you can say to the new person coming in that the chances are outrageously high that your body is going to respond positively to this diet and lifestyle that we're going to show you and that it's well worth doing.

GM: I'm someone with heart disease and hypercholesterolemia rampant in my family, and yet I lowered my cholesterol levels when I finally got the diet exactly right.

PP: Yeah, most people have had it drilled into them that it's familial; I tell them that there's no question that you have genetic predisposition. As I think I've mentioned to you, women in my family have rheumatoid arthritis and they're fat. I'm positive that it would not take me, at my age, but a year or two to eat my way into rheumatoid arthritis and obesity, if I choose to do so. But I'm not going to switch on those bad genes with my diet.

GM: How about strokes?

PP: Definitely diet and lifestyle. There are times when there is a structural abnormality that will cause somebody to develop a blood clot. That's fairly rare; again, it's diet and lifestyle that's going to cause your risk of stroke to go up. Stroke is an outcome of atherosclerosis, just like heart disease.

GM: High blood pressure?

PP: Diet and lifestyle most of the time. The causes are similar to heart disease and stroke.

GM: Cancer?

PP: Diet and lifestyle, above all. Two lifestyle factors are significant: obviously, cigarettes profoundly increase the risk of many cancers, not just lung cancer, and alcohol increases the risk of many cancers, not just liver cancer. There's a role that stress plays, but it may not be what people think. I don't think stress causes cancer, just as I don't think it causes heart disease. I think that stress often causes people to become even less diligent about taking care of themselves; that's its role in disease-promotion. As your stress levels increase, you may exercise less, eat more junk food, or turn to alcohol, and that's how you end up with cancer.

GM: What about the environmental factor for cancer?

PP: The environment is often responsible for cancer initiation, but not usually promotion; it's diet that promotes the cancer. There *are* some types of cancer, however, that are purely environmental. For example, I had a good friend die of lung cancer who never smoked. However, he owned a plastics factory. He used to spend a lot of time on the factory floor, of course, and this was at a time when environmental regulations were a lot more lax. That's probably what caused his lung cancer. That would be a case of an environmental cause, but it's an atypical case. And you also have to consider the degree of exposure. My friend's exposure was massive and daily, as opposed to our exposure to chemical carcinogens and air pollution, which is not as massive as people might believe. I think that that's a minor factor for most people.

There is an area where environment and diet overlap concerning carcinogens—pesticides and toxins in our food. The most important thing to know about toxins is that they are concentrated in the fatty tissues of animals and become more concentrated as you move up the food chain. Fish have levels of heavy metals, pesticides, and other toxins that are often off the charts. As a general rule, you'll find far less pesticide exposure in plant foods and you can wash some of it off, or avoid it altogether if you eat plants grown organically. But even the Environmental Working Group, one of the most active in trying to change farming practices, states on its website that the benefits of eating fruits and vegetables far outweigh any exposure to pesticides in those foods.

GM: Type 1 and type 2 diabetes?

PP: Type 2 diabetes is definitely brought on by diet and lifestyle. For type 1 diabetes, there are a number of causes, but a major one is dairy products through the mechanism known as molecular mimicry.^{1,2,3} Some other causes can be viruses and infections, and genetics is definitely a factor as well. In other words, we know that not all children who consume cow's milk develop juvenile diabetes, so there has to be some genetic predisposition that actually causes that to happen. Of course, we don't know which kids are genetically susceptible, so when we feed almost every child in the country cow's milk, some of them will get juvenile diabetes. The better option would be to never give cow's milk to infants and toddlers.

GM: So I take it you're an advocate for breast-feeding.

PP: I am. Dr. John McDougall says that if he were surgeon general, he would make formula available only by prescription. I'm not sure I'd go that far, but I do think we need to educate all moms-to-be that infants do best with breast milk, and there are

many negative consequences of formula feeding, including compromised immunity and increased risk for many diseases, such as asthma⁴ and Crohn's disease.⁵

GM: If somebody has the genetic predisposition to type 1 and he never consumes dairy, might the gene still express itself?

PP: It could, if exposed to the right virus or some types of infection.

GM: What do we know about the cause of Alzheimer's?

PP: Alzheimer's is a cardiovascular disease, very much related to diet and lifestyle.⁶

GM: Now that's not generally accepted wisdom, is it?

PP: No, it's not. I think the general wisdom about the etiology of most diseases comes down to genes, bad luck, and we don't know.

GM: Most mainstream doctors would concede that diet and lifestyle play a major role in heart disease, but they wouldn't say that about Alzheimer's.

PP: True. But their own medical journals, if they would take the time to read them, have shown that taking statin drugs can improve symptoms in early-stage Alzheimer's patients.⁷ That tells me that there's a connection. The other thing is that the brain is the biggest user of glucose, oxygen, and water, so it only makes sense that if you narrow blood vessels to the brain, you're going to impair its supply of those essential substances.

GM: What about the fact that with Alzheimer's, there's an amyloid plaque that forms that resembles the plaque found in people

who have Creutzfeldt-Jakob disease (CJD), the human form of mad cow disease?

PP: Yes, and there's a theory, which Howard Lyman has talked about, that some people being diagnosed with Alzheimer's actually have CJD.⁸ Alzheimer's is rarely present in plant-eating populations; it's a disease of the Western diet. It's a vascular disease that is most prevalent in the populations, like ours, that eat the most meat.⁹

GM: What's the cause of osteoporosis?

PP: Well, first of all, osteoporosis is a mythical disease much of the time.

GM: It's mythical?

PP: To the extent that it actually exists, it's principally a diet and lifestyle disease, or it's drug-induced. For example, taking steroids can cause osteoporosis. Another thing that happens is people with celiac disease and gastrointestinal disorders often have osteoporosis because they are not absorbing nutrients from foods, including calcium and other nutrients, needed to build bones. But the vast majority of the time, the diagnosis of osteoporosis is fictitious.

GM: Well, could you explain that? We have millions of Americans believing they have osteoporosis and taking drugs for it. Have they imagined it? What's going on?

PP: No, they haven't imagined it; their doctors have helped them arrive at this conclusion. Years and years ago, osteoporosis would be diagnosed if somebody would have a fracture or broken bone

for no apparent reason; maybe they wouldn't even know they had a fracture—they would just experience pain. Some type of X-ray or imaging would show that the cause of the pain was a fracture. Without the evidence of any impact or memory of falling down or anything else, they would consider a diagnosis of osteoporosis. They used to put you on this scanning device that was very expensive and very large. They would do a whole-body scan that would show porous bones in the skeleton and would give you a firm diagnosis. You actually saw bones that would be porous and poorly formed.

This changed after Merck developed a terrible drug called Fosamax to treat osteoporosis. It doesn't really work and has been linked to all kinds of side effects, including fractures to the thighbone¹⁰—the very sort of thing you'd think it would help prevent—and osteonecrosis (bone death) of the jaw.¹¹ But in the beginning, the problem was that there weren't enough people being diagnosed with osteoporosis. So Merck hired a marketing expert to change that. A conference was convened in Rome in 1992, sponsored by drug companies, during which medical experts, if you want to call them that, got together and redefined the diagnostic criteria for osteoporosis. It would henceforth be the loss of bone mineral density that would be the diagnostic criteria.¹²

The problem with that is that all people lose bone mineral density as they age, particularly women. Women have very strong skeletons because they need strong bones for childbearing; when we're past our childbearing years, we lose bone density. I'm not planning on carrying any more children, so my bones don't have to be as strong as they were when I was twenty-eight. Merck succeeded in developing diagnostic criteria that would eventually include everybody. In a process called disease-mongering, the definition of a disease is expanded so that more and more people will qualify and get treatment. The other thing that happened at this meeting was that they picked an arbitrary amount of bone

mineral density loss that was not based on any science. The question came up: What about people on the other side of the arbitrary line who aren't yet qualified for osteoporosis but are getting close? So they made up the mythical disease called osteopenia. Merck, being the ever-accommodating company, actually developed a lower dose of Fosamax to treat those people who had the mythical condition that was considered a precursor to the even worse mythical condition.

GM: So osteopenia is simply less loss of bone mineral density than osteoporosis?

PP: Yes. Osteopenia is a stepping-stone. You're told, once you're diagnosed with this mythical disease, that if you don't do something about it, you're going to progress to the next level of mythical disease.

GM: So there are no symptoms? Osteopenia is merely a way station, like purgatory?

PP: Except that I think there's probably more scientific proof of purgatory.

GM: But don't we live in a nation of elderly people falling down and fracturing themselves? Is that just natural or is something wrong?

PP: Well, first of all, let me make what sounds like an obvious, asinine statement: the number-one cause of fractures is falling. But why do people fall? They fall because they're frail, on drugs, or have poor balance and coordination. People who haven't exercised become frail. My mother hasn't exercised since 1956, so it's not surprising that she's terribly frail. Of course, we're further

frightened by the idea that once these falls happen and bones are broken, these people often become bedridden and then die; we're told it's the hip fracture that killed them. Well, it isn't the fracture that killed them; it's the poor health and the drugs they were taking that caused the fall in the first place. They're fracturing bones because of the trajectory of the fall in many instances. I'm not saying that nobody has osteoporosis; we see people in here who have it, but I'm saying the vast majority of people who think they have it, don't. These Dexa scans to determine bone density are very unreliable.¹³ Many, many health agencies in other countries have said that there's no relationship between bone mineral density and fracture risk and that the Dexa scan tells us nothing.

GM: But you do acknowledge that some people have osteoporosis, meaning some people have very low bone density?

PP: Right.

GM: And is the cause related to diet, or is it just genetics?

PP: First, it's lifestyle as it relates to exercise, or the lack thereof. It can also be diet related as it pertains to developing a GI disorder, like inflammatory bowel diseases, where you're not absorbing nutrients. The other cause is a condition called metabolic acidosis, in which you eat animal foods, highly processed foods, or foods with a high sulfur content—animal protein is highly sulfuric—and these sulfur compounds increase the acid load in the body, necessitating the withdrawal of calcium from the bones in order for the body to maintain proper pH.

GM: And the calcium is eliminated through the process of urination?

PP: Yes, you literally pee out your calcium. People drink milk because it allegedly builds strong bones due to its calcium, but in fact the high sulfuric protein content of milk winds up costing the body calcium; that's why the highest rates of osteoporosis are in countries with the highest dairy intake.¹⁴

GM: Have there been any studies that have proved this dynamic of metabolic acidosis?

PP: Yes, absolutely.^{15,16,17,18} A meta-analysis of eighteen separate studies published on bone health found that fourteen of them, or about 78 percent, supported the idea that low-acid eating improves bone health.¹⁹ So the preponderance of the evidence shows that eating animal foods causes the body to use calcium drawn from the bones to buffer the acid in order for the body to maintain blood pH within a very narrow range. We can measure how much calcium somebody takes in; it's quantifiable. We can also measure how much you urinate; that's also quantifiable. If you're excreting more than you're taking in, it's coming from somewhere.

GM: What brings on acid reflux?

PP: Diet and lifestyle. It's related to several things, but one is weight. Overweight people tend to have acid reflux because the sheer force of their weight sometimes weakens the esophageal sphincter, particularly when they are lying down. Overeating is another cause. Eating large meals that expand the stomach way beyond its capacity contributes to it. Constipation also contributes to it because all that straining pushes the diaphragm up and puts pressure on the esophageal sphincter. Certain foods, which would include alcohol, caffeine, and foods high in fat, tend to aggravate acid reflux. What's amazing is that within a fairly short

period of time, there's generally relief from acid reflux as soon as people stop eating a terrible diet.

GM: Let's move on to multiple sclerosis (MS). Genes or diet or something else?

PP: MS is definitely diet, particularly saturated fat and dairy intake. Lifestyle can also be a factor in terms of stress, which can exacerbate MS, but diet is the primary culprit.

GM: MS can actually be caused by diet?

PP: Yes, absolutely.

GM: Where is the evidence for that?

PP: Even as far back as the 1940s, there was evidence that diet played a role. For example, in areas of the world where fat consumption was higher (more than one hundred grams per day), the incidence of multiple sclerosis was higher, too. In areas where fat consumption was less than fifty grams per day, the incidence of multiple sclerosis was lower.²⁰ Studies in Norway confirmed this: in areas of the country where fat consumption was higher, the incidence of MS was higher, and saturated fat was the most harmful.²¹ But I think the most compelling evidence we have comes from Dr. Roy Swank, who developed a theory sixty years ago stating that there were certain causes of multiple sclerosis, one of which was poor diet that eventually compromised the blood/brain barrier and the intestinal barrier. It would take a long time to explain the mechanism of action, but the bottom line for him was to test his theory by placing thirty-four patients on a low-fat diet, very low saturated fat. The results were astounding.²²

Some of Dr. Swank's patients were compliant and others were not. He categorized his patients based on their fat consumption—"good dieters" consumed less than twenty grams per day of saturated fat; "bad dieters" consumed more than twenty grams per day. Patients in the group consuming less than twenty grams of saturated fat per day fared significantly better than the group eating more saturated fat. For those who ate a low-saturated fat diet, "about 95% [. . .] remained only mildly disabled for approximately 30 years." Eighty percent of the patients who consumed more saturated fat died of MS.²³ Dr. Swank published several articles in medical journals documenting his results.^{24, 25, 26} He duplicated those results on thousands of additional patients and showed that patients on a low-fat diet with a minimal amount of animal foods basically remained asymptomatic. The exacerbation rate—exacerbations are what they call these flare-ups that MS patients experience—went down by 95 percent and stayed that way in compliant patients.

GM: Dr. McDougall is doing a similar study now.

PP: He is. His diet—and I learned about diet and MS from Dr. McDougall—is a little bit different from Dr. Swank's: no animal foods, no low-fat dairy, no oils. According to Dr. McDougall, Dr. Swank acknowledged before he died that the inclusion of oils had no therapeutic value. He thought it might make people more compliant on the diet, but he didn't attribute his success to the inclusion of oil. So Dr. McDougall's diet is lower in fat. And the results are even better. It's amazing, and we see that here, too. It's complete regression of the disease, so much so that I would call it a reversal of the disease, especially in patients who adopt the diet in the early stages of the disease. People say, "How can you make that claim?" Well, there are two things that are common to MS patients: an intolerance of heat and a lack of stamina or

endurance. We have Wellness Forum members with MS who are doing bike rides for three hundred miles, taking hot yoga classes in a 105 degree room. They don't take any drugs and have absolutely no symptoms. At this point in time we would pronounce them former MS patients.

GM: So they have no symptoms?

PP: None.

GM: Is there any marker for the disease other than its symptoms?

PP: In the early stages, no. That's what makes diagnosis really difficult. Most patients start with what we call "relapsing-remitting MS," which means that they get symptoms and then they go away. Then a few weeks later they get symptoms and then they go away and the symptoms change. The doctors will say, "I can't find anything wrong with you," and sometimes send them to a psychiatrist. They'll even take spinal taps; nothing shows anything so "maybe you've got a mental problem," they are told. Doctors send them to a psychiatrist instead of telling them to improve their diet. They can go for a really long time without a firm diagnosis. Eventually you can see, through proper imaging, what looks like plaques or lesions in different areas of the central nervous system. There are some tests, a flicker fusion vision test, and some various tests you can do to test reflexes that sometimes give you a pretty definitive diagnosis, but in the early stages, there is no definitive diagnosis.

GM: What about influenza? Does it have any cause other than contagion?

PP: Well, it is contagious, but whether or not you get it, and how severe it is, depends upon your health status. About five years ago,

one of the most virulent strains of flu ran through Columbus, Ohio, that I can remember in my entire life. It was heinous. I belong to a lot of groups, and people were missing work for three weeks at a time; we were having meetings with half of the people there. One school closed for a couple days because there were so many kids sick. It was bad. And at first, none of us got sick here at The Wellness Forum, even though we're exposed to sick people every day in this office. Then one day I woke up around four in the morning (I'm an early riser), and I was as sick as a dog. I was sick for maybe four or five hours, and then it went away. I was just tired, so I took a nice nap and came into the office around one or two and made it a short day. By the next day, I was back to normal.

Well, sure enough, the next day Gary, our general manager, woke up with the flu. He had it for about four or five hours, came in later in the afternoon, and was fine afterward. One by one, it cycled through the office. We all actually got it, but nobody missed more than a half a day of work because of it. I think many times I don't get what's going around because I'm a very uninviting host for disease. And if I do get it, or somebody around here gets something, it's usually a nonevent. Nobody here misses work much for anything, and we're exposed to more sickness than most people.

GM: My old man died of Parkinson's. Is it genetic?

PP: Even if there are some genetic predispositions to it, and there may well be, I think that definitely diet and lifestyle play a significant role. Chemical exposure may be involved as well; we just don't know. The sad part is that by the time somebody has full-blown Parkinson's, we don't usually see diet and lifestyle reversing it. What we do see is that it'll stop or slow its progression, which can be a blessing for the person who has Parkinson's and anybody caring for that person, but we don't normally

see the regression that you see in MS and some of these other conditions.

GM: Have you been able to slow or stop its progression?

PP: Both, depending on how bad our clients are when they become members and start eating a plant-based diet. Sometimes we get people in such late stages that all we can do is slow it. Again, it's not the way I wish it were, but it's better than nothing. As these people degenerate, they lose their ability to communicate, or to do anything for themselves; they become tremendous burdens on their families, so even a minor reduction in the rate of its progression can make a big difference.

GM: Rheumatoid arthritis?

PP: It's almost always diet and lifestyle related, and is particularly related to the consumption of animal foods.

GM: And that's not commonly accepted wisdom, either?

PP: Oh, no. The conventional wisdom is wrong, but as I said, it's not easy to change the conventional wisdom of people in this country, including health professionals.

GM: Does genetics play a role in rheumatoid arthritis?

PP: Yes. Genetics can make you predisposed. I am positive I am predisposed. I am positive I could make myself have it in a very short time, particularly at my current age. But I don't eat like my mother, my grandmother, or the other members of my family who have this dreadful disease.

GM: What are the causes of asthma?

PP: Well, there are a lot of things that can cause asthma. There are environmental triggers and dietary triggers for sure, dairy being one of the most common.^{27, 28} Dehydration is a factor;²⁹ a lot of kids are not very good water drinkers, so that has an impact. Poor GI health contributes; people who have screwed-up GI tracts often have respiratory disorders, including allergies and asthma. We see a lot of asthma in children, which is related to many factors, including poor gut ecology due to constipation; treatment with antibiotics; and, in some situations, even vaccinations. Their guts are not very healthy and their immune systems are overstimulated. The overuse of antibiotics due to chronic infection compromises the health of their GI tracts and contributes to it as well. Respiratory toxins aggravate the situation.

Asthma tends to get better in kids if you take the dairy out of the diet, get the kid drinking enough water, put him or her on a program of dietary excellence (a whole foods, plant-based diet), and add some probiotic supplements. Generally speaking, it improves to the point where they often don't even have to use an inhaler for exercise. In older people who've had it for a long time, it takes longer to get better, but they follow the same protocol with the addition of supplements like quercetin. I recommend sea salt as a natural antihistamine. I don't recommend against salt consumption for most people, as you know, so we recommend sea salt as an antihistamine, more so in adults than kids.

GM: So how does the salt work—how much do people have to consume?

PP: We use it therapeutically; how it is used and the dose depend on the age of the individual.

Even in those cases where asthma or environmental allergies don't entirely go away, with a change in diet, people can become a lot more comfortable and reduce their dependence on antihistamines and medications.

GM: It isn't very intuitive that the GI tract would have something to do with a respiratory disease.

PP: There are a number of connections between asthma and GI function, including reflux and beneficial bacteria in the GI tract. Reflux contributes to asthma, because the acid is inhaled through the back of the throat, burns the bronchial tubes, and causes symptoms of asthma.^{30,31}

Beneficial bacteria in the GI tract are very important in regulating immune function. It is compromised by taking antibiotics, steroids, and other drugs, as well as by constipation and inflammatory bowel diseases. When enough beneficial bacteria are destroyed, leaky gut can result, allowing whole-food particles to enter the bloodstream, leading to compromised or overactive immunity, allergic responses to foods, and systemic inflammation. An overactive immune system and systemic inflammation can contribute to the development of asthma.

GM: What causes gallstones?

PP: It's definitely diet related. Gallstones are made of cholesterol in nearly all cases. People end up with gallstones from eating a high-fat, animal-protein diet. Unfortunately, one problem we have in medicine today is the overriding view by a lot of doctors that body parts are disposable. "Oh, if it's bothering you, we'll just take it out."

GM: So the gallbladder goes.

PP: The gallbladder goes, or maybe the spleen or the appendix go. I happen to think we have these body parts for a reason and we should work hard to preserve them. Unless the disease has progressed to the place where it's horrific, most people who change to the diet we're promoting would experience relief from the pain associated with gallstones and gallbladder disease. As long as they're compliant, they're fine. I've had members who say, "I eat one high-fat meal and I'm miserable," and I tell them, "Good, that's a good way to keep you on the straight and narrow. We don't have to worry so much about you because you have an instant adverse effect from straying."

It's not unusual, of course, for people to have their gallbladder removed. Then they continue their dietary habits and find out they're still just as uncomfortable because all of the fat and animal protein that they're eating is so detrimental to their health. They're usually fairly distressed to find out that some of their discomfort is coming from bile acids dripping right into the colon, which is why they still feel nauseous and sick. And the presence of bile acids in the colon increases their risk of colon cancer substantially. They were promised instantaneous relief from their discomfort; however, they end up with long-term increased risk of colon cancer and no relief from their symptoms.³² I would say that that probably happens 35 or 40 percent of the time following gallbladder removal.

GM: So having your gallbladder removed increases your risk of colon cancer?

PP: Yes. And we all acknowledge that there are situations where the gallbladder is just so diseased that you have to take it out, but doctors tend to be really cavalier about removing body parts. I think it's always worthwhile to see if a change in diet, if somebody's willing to do it, affects the situation. Sometimes it happens

so quickly—I'm talking about a matter of days—that someone calls his doctor and says, "That surgery I had scheduled for next Friday? I don't need to do it now because I'm feeling much better."

GM: Have you had Wellness Forum members who did that?

PP: Yes. I've also had members who have had their gallbladder taken out. The unfortunate reality is that what we want as human beings, from both the doctor's perspective and the patient's perspective, is resolution. The doctor and the patient want it resolved, and there's something satisfying about just taking it out. The disease is gone. It's over with, and we can just put it behind us. That's not really the case, but that's the perception a lot of people have that lead them to engage in, or consent to, risky medical practices.

GM: So if somebody has a diseased gallbladder, riddled with gallstones, and then he adopts the correct diet, will those gallstones just dissolve?

PP: Sometimes they will, but usually they just stop causing problems. If the gallstones get caught in the duct, that's when you may have to do something surgically, but not always.

GM: And what about kidney stones?

PP: Well, that's the result of several factors. The first is increased calcium concentration, which comes about from the high calcium intake that people in this country have been convinced is necessary. We have a lot of people taking calcium supplements and, of course, consuming cow's milk. The other cause of high calcium levels is the release of calcium from the bones to buffer acidity, the metabolic acidosis that results from consuming a lot of protein, fat, refined foods, caffeine, alcohol, etc. Combine the high calcium

levels with dehydration, and our poor little kidneys are forced to concentrate more and more waste with less and less fluid. You can end up with some kidney stones. They can become a thing of the past, even for people who have a lot of them, if they just start drinking enough filtered water every day and eating a healthy, whole foods, plant-based diet.

GM: How many glasses of filtered water?

PP: I like for people to drink sixty-four ounces of water a day as a base. That's for adults. Children should drink half their weight in ounces. And then you have to compensate for activities. Yesterday I ran, went to the gym, taught a hot yoga class, and then took a hot sweatbox class, so I probably had three gallons of water to compensate.

I've heard people insist that if you eat the right diet, you don't need to drink water. I disagree. We need to remember that thirst is not an adequate or reliable indicator of the need for water. There are a couple of reasons for that. One is that we salivate when we eat, which disguises the thirst response. The second is that our bodies adapt to dehydration. Eventually, just as if you don't eat long enough, you don't feel hungry anymore, if you don't drink water for a long enough time, you learn to live with dehydration and not necessarily feel thirsty. As evidence, consider the number of people who end up hospitalized for dehydration every year, in perfectly ordinary circumstances, when they could easily have reached for a drink of water.

One of the smartest people I know runs a multimillion-dollar company here in Columbus. A couple of years ago, at a meeting in New York, he passed out on the floor. They took him to the hospital; he was just dehydrated. Now, I'm sure that if this very smart, educated, wealthy guy thought that he was thirsty, he would have reached for something to drink. To insist that all of this would

just be remedied if we would drink just when we're thirsty and not worry about it the rest of the time is to miss the lesson in incidences like this, which are not uncommon.

GM: Food poisoning is obviously a dietary issue, but is there one type of diet that makes you less likely to get food poisoning than another?

PP: One way you can avoid food poisoning is to avoid chicken, fish, pork, beef, and the other foods that are more likely to give you food poisoning. The second thing is that healthy people, even exposed to a pathogen, often don't have any response to it. So if you've got really well-established colonies of beneficial bacteria in your system, even exposure to a pathogen may not make any difference. Generally, food poisoning results from consuming animal foods, with some rare exceptions like the one that happened a few years ago when spinach was contaminated by animals near the farm. The spinach was not the cause of the food poisoning; it was the nearby environmental abusers, like cattle ranches, causing the food poisoning.

GM: Yeah, it always bugs me when the news media reports some scare, like E. coli in lettuce, without noting animal agriculture as a likely cause. They make it sound like it's normal, like some lettuce from a bad seed just grows into pathological lettuce.

PP: I have no idea what they're thinking, but our best defense in any case remains maintaining colonies of beneficial bacteria, while limiting or eliminating the animal foods that generally expose us to the harmful bacteria.

GM: Does eating soy yogurt help a person get those healthy bacteria? How do you get the healthy bacteria?

PP: Well, first of all, you're born with it. You acquire it during vaginal delivery.³³ One problem we have is the overuse of Caesarean deliveries, most of them unnecessary. The baby's normal way of acquiring beneficial bacteria, which is moving through the birth canal, isn't happening as frequently, so the baby is acquiring bacteria from the hospital environment, which impairs the child.

Another way that the baby develops beneficial bacteria is through breast-feeding.³⁴ So a Caesarean-born, bottle-fed baby has an automatic disadvantage. That child is at a disadvantage for the rest of her life. That doesn't mean bad things are going to happen; it means they are more likely to happen. But let's just say that a baby is vaginally born, is breast-fed, and has healthy bacteria. That child will be fine unless she does something to destroy it, like take antibiotics or birth control pills, develop constipation, irritable bowel or inflammatory bowel conditions, or celiac disease. Those kinds of conditions impact the beneficial bacteria in the GI tract. If you've had any of those things happen, you need to take strong, pharmaceutical-grade probiotics in order to fix it.

GM: Well, most Americans have taken an antibiotic now and then.

PP: Right, and this is something I get angry about. One hundred percent of all doctors surveyed will tell you that taking an antibiotic destroys beneficial bacteria. Yet in any metropolitan area, you can count on one hand the number of doctors who put their patients on probiotics to compensate for the destruction of the antibiotic regimen. We have a lot of folks out there who have taken not just one antibiotic regimen but twenty-five or thirty of them in their lifetime and never fixed the damage. They need good pharmaceutical-grade probiotics. You're not going to replenish a destroyed colony by eating yogurt of any type. There aren't enough of the critters in the yogurt to establish the colonies. Eating soy yogurt may help a little; people claim benefits from consuming

probiotic-laced products, but they don't really grow colonies. You get some temporary relief from the symptoms, but you don't resolve the underlying issue.

Having a healthy colony of beneficial bacteria is crucial for your immune function, your ability to absorb nutrients from food, and your ability to keep the intestinal barrier healthy so that partially digested food and other pathogens and bacteria don't get into the bloodstream.

GM: And these pharmaceutical-grade probiotics, can you get them in health food stores?

PP: You can get better ones from a doctor or another knowledgeable practitioner. A lot of the best companies don't sell their products in health food stores for a couple of reasons. First of all, some people can hurt themselves with these products. For example, if a person with active Crohn's disease walked into a store, bought a really strong product, and took it home, he might end up in the hospital as a result of taking it. It could increase their diarrhea considerably, and a Crohn's patient definitely doesn't need more diarrhea. I found that the best probiotics manufacturers sell their products through practitioners rather than through health food stores.

GM: Let's discuss the causes of irritable bowel syndrome, ulcerative colitis, and Crohn's disease.

PP: Absolutely diet and lifestyle. For some people, there's also a psychological component in the case of irritable bowel; while the syndrome is biological in nature, there is some evidence that it can be brought about by psychological factors.³⁵

There are two ways in which our thoughts and emotions can impact GI health. The first is that we actually have a nervous

system in our GI tract called the enteric nervous system that operates independent of our autonomic and central nervous systems. This is what causes you to have a “gut feeling” about something. This is what causes you to have diarrhea or a stomach ache in response to stress or something of that nature. Butterflies in your stomach are your enteric nervous system acting up a bit. Also, there are certain psychological profiles of people who are more inclined to develop and maintain irritable bowel, even when you do all the right things to fix it. They continue to have it, sometimes because they get secondary gain from hanging on to the disease. Some of these people had trauma or were rewarded for sickness as children. They got excused from going to school if they had a tummy ache. Or they got excused from dinner and were given ice cream instead. So some people learn secondary gain from using gastrointestinal disorders of an undefined nature and those people grow up sometimes to have irritable bowel syndrome. There’s a little bit more of a complex causation with irritable bowel than with other ailments. On the other hand, I can say with a great deal of confidence that inflammatory bowel diseases are at base the result of diet and lifestyle choices.

GM: Is dairy one of the main culprits?

PP: Dairy is a big culprit. Animal foods are also a culprit, as are high-gluten foods: barley, rye, oats, and wheat.

GM: Now you’re talking about good, healthy, vegan foods that could cause trouble.

PP: Nuts are good foods, too, but if you go into anaphylactic shock when you eat them, you wouldn’t say they’re particularly good for you. High-gluten foods are really deadly for these people. They have to maintain complete abstinence from barley, rye, oats, and

wheat in order to maintain the complete remission from their disease. The good news is that people with inflammatory bowel diseases who follow the dietary recommendations we give them—a low-fat, plant-based diet, which is phased in over time—achieve excellent results.³⁶

GM: And that's the next malady I was going to ask you about: celiac disease.

PP: Celiac disease has a genetic predisposition. I don't think somebody eats her way into celiac disease. There is some evidence that a virus or precipitating events can contribute to it. You have to do a couple of things to recover from celiac disease. One is to stop consuming any gluten; you eliminate any exposure to gluten at all, including tiny amounts of gluten as an ingredient in soy sauce and things of that nature. You have to be very diligent about it. You also take probiotics to restore the beneficial bacteria that's been destroyed. Many people have been undiagnosed for years, so they present with considerable destruction to the GI tract. If they spend a long time taking a high-grade probiotic product, they can restore their health if they eat the right diet and abstain from all gluten products.

GM: Do you advocate blood tests to determine if someone has celiac disease?

PP: The blood test is not always definitive. The most definitive test is to take a biopsy and look at the tissue; if all the little villi are destroyed, then the person is a celiac patient. But I don't think we have to go that far. If someone has a family history of celiac disease and has gotten better since giving up gluten, that's enough evidence in many cases. Somebody asked me during a class why doctors subject these patients to a lot of these tests. I said, "Well,

some people show up with a very big disadvantage when they arrive in a doctor's office or a hospital; it's called "good insurance." One of the worst things you can have if you're at a facility where they like to do testing is good insurance. If they know it's going to be paid for, they'll subject you to as much of it as can possibly be arranged.

GM: We haven't talked about one of the leading causes of death in America, which is iatrogenic death, or death caused by medical treatment.

PP: The numbers are astounding.

GM: And when I research it, I see wildly varying estimates. Wikipedia comes up with a figure of 225,000 deaths per year; critics of the American medical system will estimate more like 800,000 or 900,000 deaths per year.

PP: Dr. T. Colin Campbell and Dr. McDougall are among those critics.

GM: It's obviously hard to know exactly what the correct figure is because so many people, especially older people, whose death may be brought on by a medication, never have that fact determined in court, and their death certificates don't reflect that cause.

PP: Well, I think the problem's getting worse. I can just tell you from my own experience, people who join The Wellness Forum are often as sick from medical care as they are from whatever was ailing them when they first started receiving medical care. Or they were perfectly healthy people who were treated for mythical diseases like osteoporosis or carcinoma in situ and become sick patients as the result of being treated for diseases they never

had. In terms of what the actual numbers are, the most reliable numbers I've seen come from sources like Shannon Brownlee's book, *Overtreated*,³⁷ a well-referenced book on the topic. Even the *Journal of the American Medical Association* has published articles showing that between 230,000 and 284,000 deaths per year result from medical treatment. This does not include adverse effects from medication that result in sickness or disability, which are estimated to result in 116 million extra physician visits, 77 million extra prescriptions, 17 million emergency department visits, 8 million hospitalizations, 3 million long-term admissions, 199,000 additional deaths, and \$77 billion in extra costs (equivalent to the total cost of taking care of patients with diabetes).³⁸ It's generally accepted that dying from medical treatment is the third- or fourth-leading cause of death in this country; at least a few hundred thousand or potentially more people die every year directly as a result of the treatment that they receive.

Now, I'll mitigate that frightening statistic somewhat. Some of the people who die from medical treatment were really sick and decrepit when they entered the hospital; while they received treatment that may have been useless and may have sped up their death, they were going to die anyway. That said, there's still an atrocious amount of death from medical treatment arising from the treatment of conditions that patients don't really have. From overmedication or unnecessary surgery. From suicides brought on by useless antidepressant and anti-anxiety drugs. Overall, it's certainly one of the leading causes of death in the country. That's why Dr. McDougall says, "Stay away from doctors; they'll kill you."

GM: Pam, having reviewed now a significant list of diseases and ailments, what's revealed to me is the sweeping and I'd say revolutionary nature of your work. Under standard medical care, a very sick patient presenting with heart disease, diabetes, high blood

pressure, acid reflux, and irritable bowel syndrome would spend his days shuttling between his cardiologist, gastroenterologist, and otolaryngologist, getting different medications or interventions for each condition. Then he'd have to hope that his medications don't interact in a dangerous way. He'd find himself on a slippery slope to doom. And there are millions of Americans who live that way, if you could call it living. Now, you would argue that all these conditions are essentially expressions of the same disease that is the Western diet, and that the remedy for all the conditions is essentially the same: a low-fat, plant-based diet. With this diet, it's quite possible no medications would be needed at all, for almost any condition.

PP: That's exactly right.

GM: Unfortunately, there are only a few places in America that take this very simple and comprehensive approach to disease, most notably Dr. McDougall's practice in Santa Rosa, California, and your own Wellness Forum based in Columbus, Ohio.

PP: That's why we need to get the word out.

GM: Since food is actually the leading cause of disease, let's get very specific now about different types of food. What's wrong, for example, with fish?

PP: There's a misperception that fish is a healthier form of animal food when, in fact, it's actually higher in fat than many animal foods. The misperception causes people to replace red meat with fish and feel that they have improved their health when they really haven't. If they eat too much fish, they may have actually made things worse because of the high fat content.

GM: But we've heard so often that it's healthy fat; it's full of omega fatty acids.

PP: I think that there isn't any such thing as healthy fat beyond a certain percentage in the diet. The idea is to eat a very low-fat diet: 15 percent at the upper end and 9 to 11 percent at the lower end for people who have coronary artery disease, obesity, and certain other conditions. So when more than 50 percent of the calories in salmon are from fat, you can't eat a whole lot of that and keep yourself within that range.

GM: Is the fat from fish better than the fat from beef?

PP: If you're crossing that 15 percent line, I don't think it makes any difference at all. And while many claim that fish is somehow protective, there have been some interesting studies on Japanese men that show that the more fish they eat, the higher the incidence of prostate cancer.³⁹ At a certain point, you cross that threshold in terms of the allowable amounts of animal protein and fat; fish becomes just another flesh food, and bad things start to happen. There are also the dangers presented by mercury and other toxins in fish. At the end of the day, the source of that animal fat and protein doesn't make much difference; it doesn't matter if you're getting it from eggs, fish, chicken, turkey, pork—it's really all the same thing.

GM: We've all heard studies reported in the news that fish allegedly protects the heart. My theory is that when they do these studies and they compare fish eaters to beef eaters, it's possible that salmon is marginally less bad for the heart than beef. People have better outcomes in terms of sudden cardiac death with fish than beef, but they've never done a study comparing fish eaters to vegans.

PP: Right. But there's another complication, too. There are some studies that show that eating fish and or taking fish oil capsules will raise HDL, or "good cholesterol," levels, which is one reason it's touted as being protective. But that doesn't make any difference. In other words, we don't really have any evidence showing that higher HDL levels are the key to better cardiovascular health. And, in fact, two drugs never made it to market, very promising drugs, not by my definition, but by the definition of drug companies and the traditional cardiology profession. These two drugs, dalcetrapib, which was developed by Roche, and torcetrapib, which was developed by Pfizer, were designed to elevate HDL cholesterol; both did that quite well. The one little problem was that the people with the higher HDL levels were dying off faster than the people with lower HDL levels, so those drugs never came to market. The concern with the ratio of HDL to LDL is completely misplaced.⁴⁰

GM: So have doctors across America misunderstood this, or have they all been misled? How did this happen?

PP: It's a fundamental misunderstanding about the role of HDL, which is to help to clear the bad cholesterol from the bloodstream. As your LDL levels ratchet down, which they do on a low-fat, plant-based diet, the need for HDL will also ratchet down. If you look at populations like the Tarahumara of northwestern Mexico, who typically have very, very low cholesterol levels, they also have low HDL levels. I love Dr. Caldwell Esselstyn's line; he says "the HDL levels of the Tarahumara Indians would make the average cardiologist in the United States apoplectic." Why? Because they would be certain that it would be deadly. We're talking about HDL levels in the range of fourteen to twenty-four milligrams per deciliters, which is very, very low.⁴¹ The Tarahumara eat

a plant-based diet centered around corn and have a low incidence of heart disease.

GM: We've talked about fish. What do you think about chicken?

PP: I sometimes refer to the strategy of replacing one bad food with another as rearranging the deck chairs on the *Titanic*. Chicken is just another animal food, and a particularly filthy one at that. It's another food that has a face and a mother, which is how we define animal food around here. The same detrimental effect that we would expect to experience by consuming too much beef in our diets, we'll see with too much chicken in the diet. We've got to stop imagining that there's some animal out there that's really healthy to consume. We've got to understand that if animal foods are consumed more than two to three times per week, and even that may be too much for some people, we're going to have problems; it really doesn't much matter what animal we pick. Chicken, even white meat chicken, is high in fat. Again, it's extraordinarily difficult if this is going to be part of the daily fare to keep fat consumption in line.

And it's not just the excessive fat that's a problem. There's no fiber. There are no phytochemicals and antioxidants. When people develop cancer, what really is going on, on a certain level, is that cancer promoters have outnumbered the anticancer agents in the diet. We have to consider the anticancer properties of food, the phytochemicals like indole-3-carbinol that we see in, for example, cruciferous vegetables. Well, chicken doesn't contain those, or any other antioxidants. It offers absolutely no protection, and that's why I say if it rises above the level of condiment in the diet, it's deadly. There are no "better" animal foods. When we start talking about grass-fed beef and organic beef and organic chicken and those sorts of things, we're still talking about a product that has

no fiber, no phytochemicals, no antioxidants, and is high in fat. Yes, we avoid some of the hormones, steroids, and antibiotics that are given to conventionally raised animals, but the amino acid chains that make up those animal foods are exactly the same, and they're just as cancer promoting at a certain concentration in the diet. All the evidence points in the same direction: you should not consume much of this stuff, or any of it at all. My preference is none at all.

GM: I like to look at it this way: carbohydrate is the most efficient fuel for the human body.

PP: Right. And when the body is forced to use fat or protein for fuel, it'll do it, but it's a very cumbersome process; it's very stressful and quite toxic to the body to do that.

GM: So we know that carbohydrate is the natural fuel for the human body and we know that fiber is necessary and health promoting to the human body. Yet we look at these flesh foods and they have no fiber and no carbohydrates. It strikes me as a clue that they're not human foods.

PP: Right. These are not the foods we were designed to live on. Our intestinal tracts are long. We need a lot of fiber to push food through the system, and the primary enzyme that's secreted in your saliva is amylase, which is an enzyme that breaks down starch. We could anatomically take a little tour through the digestive system, starting with what happens when food enters the mouth, and make a strong case for our design being geared toward consuming plant food.

GM: Which brings us to another high-fat, high-protein, zero-fiber, low-carbohydrate animal food: dairy.

PP: I think that's the most toxic of all. When I give lectures, I get asked, "If I were going to do one thing and one thing only, what would you suggest I do?" Well, one change alone won't do the trick if you're eating the standard American diet. But if you're going to make an important first step that would improve your health, get the dairy out of the diet. Dairy products have no upside. On the downside, dairy proteins have been linked to asthma, allergies, chronic constipation, chronic ear infections in children,^{42, 43} multiple sclerosis,⁴⁴ autoimmune diseases, breast cancer, prostate cancer,⁴⁵ and osteoporosis.⁴⁶ The likelihood that a genetically susceptible child consuming dairy products will develop juvenile diabetes is actually greater than the likelihood of a smoker developing lung cancer.^{47, 48, 49} That's kind of hard to wrap your arms around when you think about it, particularly since our government actually promotes the consumption of dairy products by children.

GM: People who follow the federal dietary guidelines, the ever-changing pyramids and plates that the United States Department of Agriculture (USDA) spends untold millions revising, believe they're eating a balanced diet. Are they so wrong in believing that their diet of fruit and vegetables and grains on the one hand, and dairy and eggs and meat on the other hand, is at least balanced?

PP: Only in the sense that it can lead to a balanced need for various types of medical interventions. Here's something I've observed: a family of four people sits down to eat dinner in a restaurant and there's absolutely nothing on the table they're eating that I would put in my mouth. You have one person eating a cheeseburger and fries. The next is eating chicken and cheese quesadillas. And the next one is having a spinach quiche. The last one is having a turkey sandwich. They're all drinking sodas and lemonade. This is the whole family's dinner. It would probably be heartily endorsed by

the USDA and there's not a single worthwhile, nutritious thing on the table. They just have no idea that the meal they just spent fifty or sixty bucks on is worth nothing nutritionally. "Oh, cheese is good for your bones, the chicken is lower in fat than the beef, and the fries must be better because they're housemade. Oh, and it's Diet Coke." They use all this ridiculous criteria to justify the choice of these foods and believe that they're doing reasonably well, but it's all just horrible.

GM: Beyond animal foods, there are other sins in the standard American diet.

PP: There's the fat content in general, but what makes it really horrendous are the oils; people cook with oils, packaged foods and baked goods contain oil, salad dressings are full of oil, and restaurants overuse it. So people consume enormous amounts of oil and fat in the diet. And enormous amounts of plain junk foods.

GM: What about sugar and sweets?

PP: Well, I always tell people that we can't vilify individual constituents because it's the pattern that makes the difference, but sugar is just empty calories and is also addictive. I don't know very many people—I can think of a handful—who can be around sweets without eating them. I personally don't like those people. I'm very envious of them because if it's in front of me, I want to eat it. Dr. Neal Barnard, in his book *Breaking the Food Seduction*, writes that there are studies that have shown that the effect of sugar on the dopamine receptors of the brain is very similar to the effect of drugs like heroin and cocaine on those dopamine receptors. Most people don't understand when they buy this stuff at the store that it has a highly addictive quality and that they're going to want more and more of it.

Not only do sweets not provide any nutritive value, and one could argue that they're destructive to health in terms of elevating blood sugar levels and suppressing immune function, but they displace healthy foods in the diet. If someone eats eight hundred calories' worth of cookies and brownies in a day, that's eight hundred calories that aren't going into sweet potatoes and vegetables and rice and other foods that would actually have some protective value.

The other thing to remember is that these refined sugary foods elevate triglycerides. And triglycerides are blood fats waiting to cause mischief. Triglycerides and cholesterol will go down when you get rid of all that refined and processed sugar-filled stuff.

GM: Now, is there anything wrong with buying a box of crackers, whether it's something like Ritz crackers, or even crackers you might see in a health food store made with whole wheat flour and organic sesame seeds and so forth?

PP: There's definitely something wrong with the Ritz crackers. The top ingredients for your regular, store-bought cracker brands, the ones that most people would know about, are sugar, white flour, and some type of fat. This is just absolutely junk food. There's no nutritive value to it; you don't want to buy it. When it comes to crackers in a health food store, you can find a few that don't contain oil. However, any type of processed food like that is going to be calorie-dense. You really don't want to be filling your diet with calorie-dense food.

I don't completely abstain from eating crackers, but they're not a staple of my diet. I like fat-free hummus; I use it for vegetable wraps, but I also like to eat it as a dip. Now most people would dip crackers in it; I dip mushroom slices, sliced cucumbers, carrots, and things like that in the hummus. They're much better for you than crackers. If I were having a party this weekend, I might

have some crackers, but I'm working alone this weekend, so I'll be dipping my mushroom slices in the hummus.

GM: Okay, let's talk about fatty plant foods. Let's assume you're eating these foods in their whole state. Avocado—anything wrong with that?

PP: Well, there's nothing wrong with any of these foods for a relatively healthy person. Avocados, nuts, seeds, olives—I love them. What I tell people is that they don't want to be going out of their way to consume them, though, because they can end up eating a diet that's quite high in fat with those foods. Our Chef Del is a good example. On a totally vegan diet, he ate himself to 475 pounds.

GM: What the heck was he eating?

PP: High-fat plant foods, fried food, baked goods . . . Del used to eat lots of avocados and almonds by the handful. Now he's lost half of himself. I want to make that clear; he's done a great job since he's been here. So my rule is that I eat these fatty plant foods when they occur in a dish, but I don't go out of my way to eat them. A restaurant near my house makes black bean wraps and the chef puts slices of avocado in them; I eat that. We have a dish here called vegetable byriani that has almonds in it; I eat that. But I don't buy avocados at the store and put them on all of my salads. Nor do I have a bag of almonds at my house to nosh on because these are densely caloric, high-protein, high-fat foods. I tell everybody I could easily be a three-hundred-pound vegan. I'm at a healthy weight because I minimize this kind of stuff in the diet.

GM: What about coconut? I'll go into a health food store and there will be all these raw desserts, these supposedly healthy alternative

desserts. However, they have so much coconut in them that they'll have eighteen grams of saturated fat. Is coconut as unhealthy as it appears to be?

PP: Absolutely. It's full of saturated fat. Now, having said that, I love it. If you told me I could never have coconut again, I might have to end my life. So I don't want to give it up, but I'm very clear that it's a treat. Raw food desserts and raw food dishes in general are very high in fat. They often accomplish the textures they desire by using really high-fat foods.

This issue of food-versus-treat is something we just have to drive home. On the one hand, we certainly don't want people to think they're making a sixty-year commitment to never having dessert, birthday cake, or wedding cake, etc.; that's not going to fly. Nor do we want people stressing out thinking they blew the diet. That's a bad idea. On the other hand, this stuff can't be part of the daily fare. We need to make the whole foods our daily fare and make the treats occasional. And this is something that people get into all the time: "Well, what do you mean by occasional?" And I tell them it should be situational. Do we have a reason for having this item that is not part of the daily fare? If you graduate first in your class, a glass of champagne is okay. But today's Tuesday, it's a pretty normal day, we're not celebrating anything around here, so I think we ought to just eat our beans and rice and vegetables.

GM: On the subject of plant foods that you have to watch your intake of, what about dried fruit?

PP: There are two issues with dried fruit: First, it's high in calories. You can sit down and eat half a bag of dried apricots pretty easily. Just think about how many calories you consumed. It's like eating three dozen apricots, which you would never do. Second, you have to make sure the dried fruits you're buying aren't adulterated.

There are lots of sulfites, coloring agents, and sugar in many dried fruit products. Any time you buy cranberries that taste good right out of the package, you know that they've had sugar added to them because cranberries are actually sour. Be careful when you buy dried fruits; you don't want to be eating a lot of that stuff. Again, I'll eat it when it's in a dish. Del makes a great salad here that has raisins in it, or I'll put raisins on my oatmeal every so often. But I'm not eating handfuls of dried bananas, dried apples, dried pineapples, that kind of stuff.

GM: How about fruit juice?

PP: Never.

GM: Okay, what's wrong with fruit juice?

PP: It's concentrated calories and sugar. Instead of drinking apple juice, eat apples; instead of orange juice, eat oranges.

GM: What about salt?

PP: Well, now we get into a contentious issue. Salt restriction is one of those things that became part of the conventional wisdom; we've been told it's necessary for people to restrict salt in order to have normal blood pressure.

Early in my career, I heard Dr. McDougall buck the establishment by saying that salt restriction is not only inadvisable but may be detrimental. I got curious about it, so I reviewed the studies that had shown that salt restriction was beneficial; the difficulty was that salt restriction is usually accompanied with other dietary changes. The famous DASH (Dietary Approaches to Stop Hypertension) diet, promoted by the USDA to lower hypertension, is probably the best example of this. The participants of the

DASH study were eating more fruits and vegetables, less animal foods, higher fiber, and less salt.⁵⁰ I don't think we can attribute the improvement in their health to the salt restriction alone, when people were making so many other changes to their diet at the same time. I just really could not find a lot of clear evidence that salt restriction was important. On the other hand, according to the 2007 National Health and Nutrition Examination Survey, which included almost one hundred million adults, people who eat more salt have a lower risk of death from heart attack and stroke.⁵¹ There are many populations on the planet that eat a lot more salt than we do that enjoy great cardiovascular health.

GM: Is Japan one of those?

PP: Japan is one of those, yes. And parts of China.

We've used salt to cure and flavor food for centuries. I don't think we can attribute our current epidemic of hypertension to salt. The bottom line is this: when you adopt the diet that we recommend, your consumption of salt is going to ratchet down quite a bit because you're not going to be eating processed meats and as much packaged foods as you were before. And another very important thing is going to happen, too—your consumption of other minerals and nutrients like potassium will go up. I think that one of the issues is the ratio of salt to other nutrients, particularly potassium, in the diet, so you're going to experience salt reduction. Also, if you salt your food at the table instead of in the cooking process, you're going to use less salt, and I think that's a good idea. In any given year, we end up with half a dozen people here who have to restrict because they really have some salt sensitivity; their blood pressure goes up when they eat salt, and it goes down when they don't.

GM: So you're not denying that that relationship could exist?

PP: Oh, it does exist. But as public policy, what we're doing is restricting millions of people to try to help a handful who need the restriction.

GM: Aren't we salt-restricting millions of people primarily because of their blood pressure?

PP: Well, yes, but they don't need to be restricted.⁵² In other words, if they lost weight and they ate a plant-based diet without salt restriction, their blood pressure would come down naturally, without restricting it overtly. If you look at the mechanism of action for high blood pressure, a lot of it is related to damage to the endothelial tissue. If the endothelial cells can't produce nitric oxide, which is a vasodilator, the vessels start to close a little bit. Add in a little arterial plaque and the lumen in the vessels start to narrow even more; essentially, you're trying to force more blood through narrower arteries. That's the recipe for high blood pressure. Well, when you put people on a low-fat, plant-based diet, the plaque deposits stop forming and the narrowing of the lumen of the blood vessels isn't happening anymore. We stop assaulting the endothelial tissue and it starts to regenerate; it begins to produce nitric oxide and opens up those blood vessels. It's amazing, over a period of time, how many people will have their blood pressure return to normal. Add in some exercise and take off a few pounds and most people will be able to get their blood pressure down without salt restriction.

I want to mention one thing. This is not my idea—it's a Dr. McDougall idea that's worth sharing, and there's a considerable amount of evidence in the medical journals to support it.⁵³ Remember that our object is to encourage people to eat starchy foods and vegetables. And if salting the broccoli makes them eat a lot of it then, by gosh, let's put some salt on it. I don't want the vast majority of people who aren't salt sensitive to think they're cheating because they put salt on their broccoli and rice.

GM: What about the meat analogs: the tofu hot dogs and the Gardein meats and so forth?

PP: Well, some of them are pretty clean. Using tempeh to give spaghetti sauce the texture of something with ground meat in it, if it's a clean tempeh product, like the ones we make at Wellness Forum Foods, I don't have any problem with that. I do it; we do it here. What I have a problem with is these highly processed meat analogs that are just garbage food, like the tofu hot dogs and the fake pepperoni. Once in a while, it's not a problem. People invite me, say, to a Memorial Day picnic and they say, "Pam, we've got veggie burgers for you." They may be overly processed veggie burgers, but it's Memorial Day and people are being nice. I'm not going to die from eating a veggie burger that isn't clean. It's only when this kind of garbage infiltrates the daily diet that you don't really end up with the health improvement that you're looking for. These fake meats are transitional foods and treats. If you've got to feed your kids some tofu hot dogs to get them through the transitional period, that's fine. However, if you're still doing it two years later, you're just postponing making some serious health improvements.

GM: How do you feel about the raw food diet?

PP: That's a complicated question. What typically happens to people who adopt a raw food diet is that they do really well for a while because of all of the things that they eliminate. Many people who start a raw food diet come from eating some version of a terrible diet, so they feel really great. But then, even with the meat and the dairy out of their diet, they start to feel badly. The biggest reason they feel badly is that they can't get enough calories from eating only raw foods, or they have difficulty doing so. When they begin to feel the impact of the calorie deficiency, they

start to increase their calorie count by eating nuts and oils and things of that nature. Then they start to get sick.

There are some people who are able to maintain a raw food diet well. Not everybody gets it wrong, but most people don't do it well and end up worse off as a result. I think the bigger issue is that we really don't have any evidence that shows that a raw food diet is better than a diet that includes cooked food. One of my philosophical issues around raw food is that what we're asking people to do is a big enough change all by itself, without adding layers of difficulty to it that are unnecessary. Often I find that these added layers of difficulty attract a lot of attention at the expense of things that are much more important. I think it's much more important to deal with fat in the diet, for example, than to eat all raw food. It requires an involved discussion about the effort that it takes to do the raw diet right and to teach people how to dehydrate foods and all that sort of thing; I don't see that it's worth it.

GM: I look at it this way: there are two important goals in nutrition. One is to obtain nutrients and the other is to avoid poisons or deleterious substances. Now, if you eat a lot of raw greens, vegetables, and salads, you get a lot of nutrients, which is a positive. You want to have a healthy complement of raw foods in your diet. Then if we add to these some rice, potato, or other plant food that requires cooking, there's no downside. We're not getting any poisons. We're not getting something that's high in fat or full of toxins or has animal protein or anything else. I just can't see the case for abstaining from healthy, cooked foods that satisfy our appetites, as long as we're getting our full complement of nutrient-dense raw foods.

PP: I agree with that. We want people to eat lots of salads and raw foods. But the extreme idea that you try to live on only raw foods

doesn't play out really well in real life. We need those cooked foods, those cooked starchy foods, because otherwise it's difficult for the diet to be calorically adequate.

One fun dining adventure that I enjoy in many cities is to sample raw food restaurants. There are many in Los Angeles, and I've had the pleasure of dining in some of them. The food is just phenomenal at some of these places but—and this is a big but that could lead to a big butt—it's also very high in fat. If I ate at those restaurants every day, I'd be a three-hundred-pound vegan.

The whole idea of adopting a health-promoting diet is not to separate yourself from the rest of humanity and make it impossible to interact with the rest of the world. That's a terrible outcome, in my opinion. The emphasis on eating only raw food, and food combining, and a lot of other ideas that are circulating, make it harder and harder for a person to be out among the rest of the world. I don't want to stop going to family gatherings and book club, or any of the other things that I do that involve interactions and meals with other people. I don't want to adopt some eating style that's incompatible with the way the rest of the world lives. I can eat the plant-based diet we've discussed here; I can practice dietary excellence anywhere I go. I can't practice raw food-ism and food combining and a lot of these other extreme things every place I go.

GM: How do you feel about the macrobiotic diet?

PP: Well, that's interesting. There's some evidence that the macrobiotic diet is helpful for resolving cancer. We don't really have a lot of studies that point in that direction, but we have a lot of stories, enough that I think if somebody wanted to do a study on macrobiotic diets and cancer, it could be justified from a funding standpoint. It'll never happen because the drug companies will never let it happen, but I've read enough about it to believe there's something to it.

One thing that's misunderstood is that the macrobiotic diet isn't just a diet; it's a lifestyle, too. The people who have succeeded with it have not only adhered to the dietary principles but they've done a lot of the other things that are recommended in terms of the way they live their lives. I think if you're going to do macrobiotics, you're going to have to incorporate the whole program to get the benefit.

The macrobiotic diet can be difficult in terms of food preparation; it takes a lot of time. What we don't know is if it's the specific combination of foods that are included that's causing the positive effect, or if it's simply the elimination of some of the bad foods that's causing the positive effect. In other words, do we really have to do all of this, or can we get the same results from just eating a plant-based diet? I'd love to see a study with leukemia patients comparing a macrobiotic diet to our Wellness Forum plan to see if there truly is a difference between the two. Will that ever happen? No, not in this country.

GM: I lived in Boston in 1983 in a vegetarian group house near one of Michio Kushi's macrobiotic schools (Kushi founded the Kushi Institute). Whenever we advertised for a new roommate, a lot of his students would come and interview with us to see if they wanted to live in our house. They would always ask the same question: "Do you eat vegetables that grow at night?" I would say, "I don't know. I never get up to watch."

Is there anything to this "nightshade vegetable" thing? Apparently potatoes and eggplants and I'm not sure what else grow at night; is there any basis for concern about that?

PP: No, not generally. There are some patients with arthritis—it's a very small minority—who seem to do better without nightshade vegetables. I think you bring up a great example of what I was just talking about. That's a layer of difficulty added to eating

a macrobiotic diet, and we just don't have any research to show that added level of restriction and difficulty is necessary most of the time. I'd love to see it studied someday; maybe I will live long enough to see the right types of studies done about diet in this country, but right now we just don't have the evidence for it.

GM: Speaking of potatoes, what's the best way to prepare a potato? Baked potato, boiled potato? Do you eat the skin, do you not eat the skin?

PP: I always eat the skin. I love potato skins. Boiled, baked, steamed—those are the ways I usually have them. But it's not necessary to eat the skin if you don't want to.

GM: Now what about a glass of wine in the evening? Anything wrong with that?

PP: Every evening is a big deal. Alcohol is not beneficial for health. The several studies that have shown that occasional drinkers are healthier than abstainers have not, I think, accounted for the fact that many abstainers are abstainers because of health conditions. I don't see a benefit from drinking, but I don't want to take the enjoyment out of life. I know some real purists, and they're a pain in the butt to be around. I don't want to be one of them. It doesn't attract people to our way of life. I enjoy an occasional cocktail and I don't discourage our members from doing so unless they have a condition like pancreatitis or hepatitis C. I think the average person can certainly drink some alcohol, but not every day.

GM: What do you say to those who believe that a daily glass of red wine explains the so-called French Paradox? They manage to eat a fatty, animal-based diet with less heart disease than Americans.

PP: First of all, the incidence of heart disease and cancer in France is very high.⁵⁴ It's lower than the United States, but it's still very high. I wouldn't be attracted to that type of risk profile. Second, the French, as well as other populations in Europe that eat similar diets, eat an enormous amount of legumes, fresh vegetables, whole grains, and fruit. The people who truly abide by this diet are not overweight. And while they eat plenty of animal foods, they eat much smaller portions than we do in America. I've spent a lot of time in Europe; I've eaten the Mediterranean diet in Europe, so I know what I'm speaking about.

Having said that, their disease rates are still high. To the extent that their health is better than ours, it's not because of the red wine or olive oil; it's because of the entire way they live their life, which includes more walking and more physical activity. It's their pattern of diet and lifestyle that is somewhat protective, not red wine and olive oil, and in any case they're not as healthy as is sometimes reported. What happens here is that people look at various diets and they read about the Mediterranean diet and say, "I like the red wine and olive oil," and they extract that and add that to the American diet, only to make things worse.

GM: Chocolate has been in the news lately because of studies that allegedly show that it's very good for the heart. That seems to be too good to be true.

PP: And it is. The danger would be people thinking they can continue to eat the fatty Western diet and then protect themselves with fatty chocolate bars. The study that was in the news recently was a meta-analysis of seven studies. Only five of the seven showed some benefit. Even the researchers issued a caution about how to interpret the results because chocolate is high in fat and calories; even *they* did not interpret their own study as a mandate to begin eating chocolate as a preventive tool.⁵⁵ If there's

some legitimate good news here, it's that if you're in good health and practicing a low-fat, plant-based diet, you can treat yourself occasionally to some chocolate without worry.

GM: What about coffee?

PP: Coffee has been a little vilified. There's no question that caffeine is a drug. As with alcohol, if you abuse it, you're going to have problems. I used to be a caffeine abuser, so I can speak to that from extreme personal experience. It used to take three pots of coffee a day to keep me going. I don't think the occasional cup of coffee is a dealbreaker. When people who are completely compliant with the diet say that a cup of coffee in the morning is something they want to do, I'm not going to make an issue out of it. To do so would be choosing the wrong battle. But when I see people drinking coffee all day long to stay awake and masking symptoms of fatigue, which should signal to them that they're overworking themselves and that their body is exhausted, I'll make an issue of that.

GM: I'm pleased to say that I've had only one cup of coffee in my life.

PP: How'd you manage that?

GM: Well, I was a seventeen-year-old high school student and visited the college I would ultimately attend, New College in Sarasota, Florida. Somebody told me that there would be a coffee klatch in the evening at the home of Professor Peggy Bates, so I went there to meet the students and some professors. Dr. Bates said to me, in front of everyone, "Glen, do you drink coffee?" Well, I never drank coffee growing up; it had never occurred to me to try it. But now I was going to college, joining the grown-ups,

and I didn't want to make a fool of myself, so I had to think on my feet.

I said, "I don't know."

She said, "Well, Glen, would you like to try a cup?"

I said, "Sure."

So she gave me my first cup of coffee. And I drank a few sips. It tasted like mud. It was the worst tasting drink I'd ever experienced. I couldn't imagine that people actually drank this crap. So I never had coffee again.

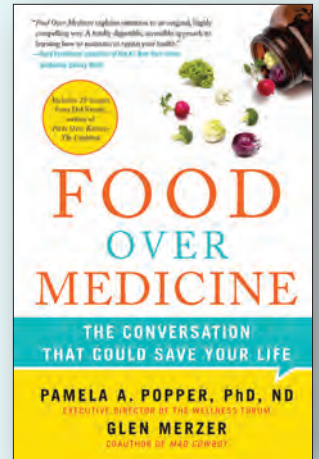
Cut to twenty years later. My old literature professor was retiring, and I flew back to Sarasota to speak at his retirement dinner. I'm hanging around the campus and I meet a young woman from China who is a new student at the college. She tells me she's studying international relations with Dr. Bates. I say, "Oh, is she still here? How's she doing?"

She says, "Great. She's just the greatest professor. But she makes the worst friggin' coffee."

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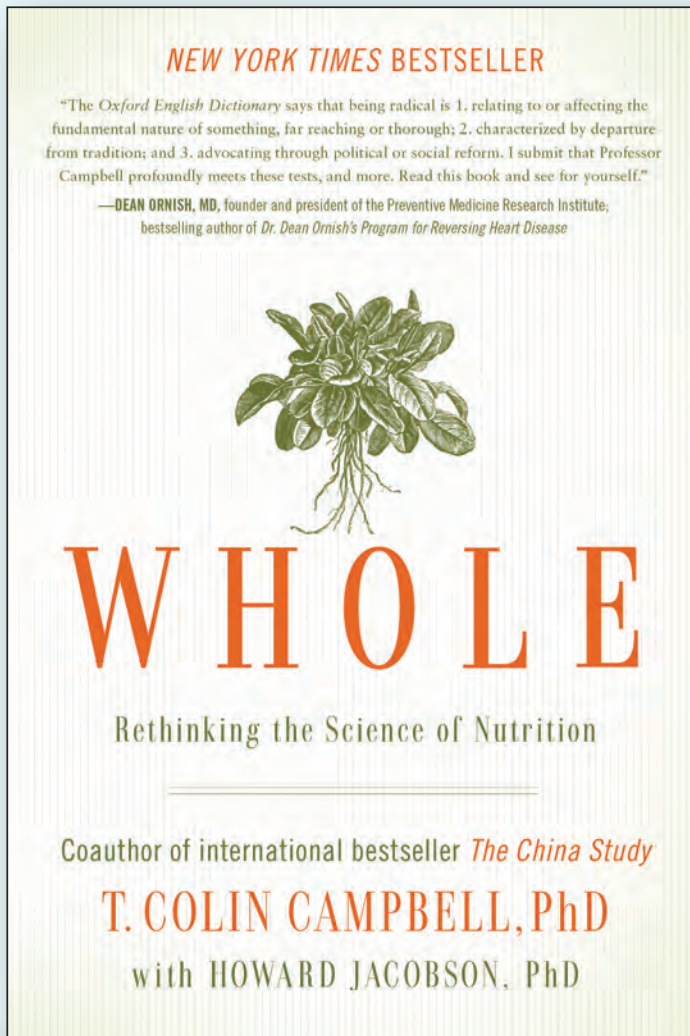
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Reductionism Invades Nutrition

T. Colin Campbell, PhD and Howard Jacobson, PhD



5



Reductionism Invades Nutrition

*The first problem for all of us, men and women, is
not to learn but to unlearn.*

—GLORIA STEINEM

I know food and nutrition aren't considered to be very important outside my little world. The newspapers I read have sections on politics, business, sports, and entertainment, but none of them devotes a daily section to food policy. Food writers are restaurant critics or purveyors of recipes, relegated to the same pages of the newspaper devoted to hairstyles, fashion, and home decor. But food is pretty much the most important topic there is. No food, no civilization. Crop failures, outbreaks of mad cow disease, and contaminated produce could bring our society to its knees very quickly. We assume we're immune to such catastrophes because

most of us think about food as the stuff we buy at the supermarket. And every time we go to the supermarket, guess what? It's overflowing with food. We aren't going hungry, so everything must be fine.

But just because we don't think about our food all the time doesn't mean it's not critically important. Most of us don't obsess over our oxygen supply, but people who find themselves submerged in water or trapped in a smoky building can think of nothing else. Food is as fundamental to our survival as oxygen. But while we all breathe the same air, we have lots of choices when it comes to food, and those choices determine not just how we eat, but also how we utilize our agricultural land, what our government subsidizes, what we teach our children, and what sort of society we create.

In the same supermarket, we can choose to fill our carts from the produce section, the dairy case, the meat freezer, the canned goods aisle, or the packaged-goods aisle. We can get our produce from local growers or from giant factory farms in South America. We can eat out at fast-food restaurants or cook in our own kitchens. And when our choices cause us to gain unacceptable amounts of weight, we can adopt any one of a thousand different diet plans, from Atkins to Paleo to Weight Watchers to macrobiotic. All these individual choices add up to affect our national food "system," just as the food system itself strongly influences those individual choices. Both the system and our personal choices have been heavily driven by our beliefs about nutrition.

If they weren't, would such a large percentage of food packaging be taken up by nutritional labels? Why else would the federal government spend so much money and time creating food groups, food pyramids, recommended daily allowances, and daily minimum requirements? Why else would the FDA create and enforce rules about what food, drug, and supplement manufacturers are allowed to claim as health benefits?

So although it doesn't make the news very often, food, and our national policies about it, determine a great deal about our society. And nearly everything our society believes about nutrition has reductionist fingerprints all over it. In this chapter, we'll explore how the reductionist paradigm has led to poor nutritional policy and confused consumers, as well as how and why nutrition resists the reductionist model our society works hard to put it in.

REDUCTIONIST NUTRITIONAL SCIENCE

The definition of the word *nutrition* is something I've thought about a lot: every so often during my fifty years in academia, our nutrition faculty would have a retreat and spend some of the time trying to figure out what the word really means. These could not have been very productive, because the same discussion had a way of reappearing at every retreat.

Each time, we'd eventually conclude with some default definition, something resembling the ones found in standard dictionaries. Something like "a process of providing or obtaining food necessary for health and growth" (*Oxford English Dictionary*) or "the act or process of nourishing or being nourished; specifically the sum of the processes by which an animal or plant takes in and utilizes food substances" (*Webster's*).

I don't like either definition. *Webster's* definition fails partly on technical grounds because it uses the word *nourished*, which is a derivative of the word *nutrition*. You can't define a word by referring to itself! That *Webster's* resorts to this sleight of hand shows how troublesome the word really is.

The other, more substantial problem with the *Webster's* entry is the word *sum*. I remember sums from grade school math. We added two numbers and got a third. The third, which we called the sum, was nothing more or less than what you got by adding the first two numbers. That's the very soul of reductionism, remember: the sum (total) can be completely known if you know each individual part.

Both *Oxford* and *Webster's* use the word *process*, which points to something important but, on its own, is inexcusably vague. The *Oxford* definition focuses entirely on the process of nutrition as something that occurs outside the body: food is either provided or obtained. This leaves no room for nutrition as an internal, biological process, nor a complex one. To reductionists, nutrition is just the arithmetic summation of the effects of individual nutrients. These misleading definitions in two of the most respected and frequently used English dictionaries show how profoundly the reductionist concept is embedded in our culture.

If you were taught statements like, "Calcium grows strong bones," "Vitamin A is necessary for good eyesight," and "Vitamin E is a cancer-fighting antioxidant," you learned nutrition the same way. The same is true if you count calories, or pay attention to percentages on the nutritional labels on packaged foods, or wonder if you get enough protein, or start

slathering your fries in catsup because you hear tomatoes are a good source of lycopene.

These beliefs make sense only in a reductionist paradigm that identifies the component parts of food—the individual nutrients—and figures out exactly what each one does in the body and how much of it we need. And this is precisely what we scientists are trained to do. I was taught nutrition in this way and I taught it the same way to my students. This included an upper-level course in biochemistry at Virginia Tech, an upper-level course in nutritional biochemistry at Cornell, and two new graduate-level courses in biochemical toxicology and molecular toxicology for a new graduate field of toxicology, also at Cornell. Like other faculty in these fields, I followed the typical textbook model of lecturing, mostly focusing on individual nutrients, individual toxic chemicals, individual mechanisms of action (i.e., biochemical explanations), and individual effects, as if there were, for each nutrient or chemical, one main mechanism that explains and perhaps controls the relationship between cause and effect.

When I taught nutrition in this traditional, reductionist way, here's how it went. We began by considering the chemical structure of the nutrient. Then we discussed how it functions in the body: its absorption across the intestinal wall into the blood; its transport through the body; its storage; its excretion; and the amounts needed for good health. We talked about each nutrient on its own, as if it acted alone in a totally mechanical fashion. In other words, teaching nutrition meant getting students to memorize facts and figures and chemical pathways to pass tests without asking them to think about the context for these discrete bits of information.

We do the same thing in research as we do in education. The gold standard of nutritional research—the type that receives preference for funding and gets published in top-line journals—focuses on one nutrient and one explanation of its effect. My experimental research program focused on the effects of discrete causes, reactions, enzymes, and effects, oftentimes outside of the context of the body as a whole—in part because, as I mentioned, I, too, was taught to think this way,¹ but also because, in order to get research funding, we scientists are forced to focus our hypotheses and experimental objectives on outcomes that can be measured.

Let me give you a specific example from the initial stages of my own research on cancer formation initiated by aflatoxin (AF), a chemical known to cause liver cancer. (As you may recall from the introduction,

AF was the carcinogen produced by the peanut fungus I was looking at in the Philippines.) Figure 5-1 summarizes the process we were studying (using a diet of 20 percent casein, or milk protein).

My lab research at this early stage was completely acceptable according to the reductionist rules. We focused on one kind of carcinogen (AF) that caused one kind of cancer (hepatocellular liver cancer) that depended on one kind of enzyme (mixed-function oxidase) that metabolized AF to produce one kind of highly reactive product (AF epoxide) that produced one biochemical effect (the very tight chemical bonding of the epoxide to DNA that causes genetic damage), each stage of which seemed internally consistent and biologically plausible. And we discovered that the more the carcinogen bound itself to the DNA, the greater the amount of cancer occurred.² Aha! This was *the* mechanism that “explained” the effect of protein on cancer!

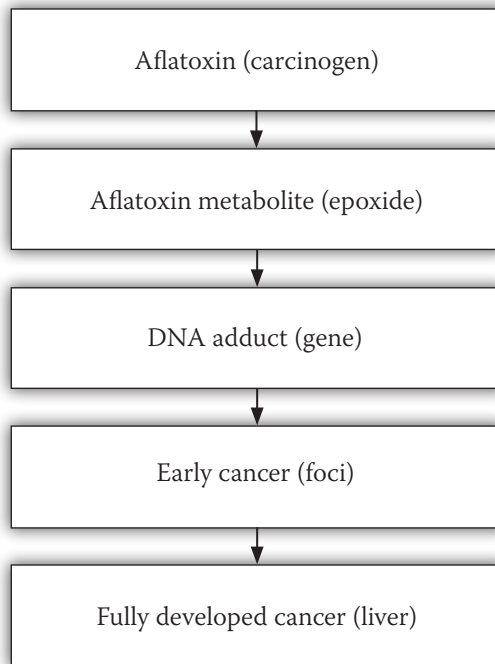


FIGURE 5-1. A linear model of cancer causation from aflatoxin

A couple of thoughts about the previous paragraph: first, I don't expect you to understand everything I wrote. I'm describing complex biological and chemical reactions in the kind of specialized language used by scientists everywhere to communicate with precision. All you need to know is that, according to this model, A causes B, which causes C, which leads to D. So the more A (cancer-causing chemical) you start with, the more D (cancer) you end up with.

Second, it probably sounds pretty convincing, even if you don't really understand it. Research like this seems airtight because it deals with objective facts—reactions, genetic mutations, and carcinogenesis—as opposed to messy things like human behavior and lifestyle. Only by excluding messy and complex reality can we make linear, causal statements about biological chain reactions.

Although we worked diligently on this series of studies for many years, obtained very impressive results, and published lots of professional papers, we were still left with a major unanswered question: did this finding—that higher dietary casein intake produced more cancer in rats—tell us anything about other proteins, chemical carcinogens, cancers, diseases, and species (e.g., humans)?

In other words, did this startling outlier result about dietary protein suggest that our love affair with animal protein was misguided and dangerous? Did cow's milk in modest quantities promote cancer in humans? What about other diseases? Did other animal proteins have the same effect? While I tried for decades to answer these questions using reductionist tools, it gradually dawned on me that these questions often strayed beyond what reductionist science could answer. Not because you couldn't set up experiments to compare the effects of a diet high in animal protein with other factors typically found in a WFPB diet. Those have been done, and the results are jaw-dropping (particularly the research and clinical experiences of Esselstyn, McDougall, Goldhamer, Barnard, and Ornish, some of which we touch on elsewhere in this book).

No, the problem with reductionist research is that it's too easy to run experiments that show what appears to be just the opposite effect: that milk prevents cancer. That fish oil protects the brain. That lots of animal protein and fat stabilizes blood sugar and prevents obesity and diabetes. Because when you're looking through a microscope, either literally or metaphorically, you can't see the big picture. All you can see is a tiny bit

of the far larger truth, completely out of context. And whoever has the loudest megaphone—in this case, the ones shouting that milk and meat are necessary for optimal human health, whose megaphones are thoughtfully provided by the meat and dairy industries—have the most influence.

I'm sure that given enough time and money, I could conduct reductionist-style experiments that show health benefits for Coke, deep-fried Snickers bars (these are very popular at the North Carolina State Fair), and even AF (we actually showed such effects once in our lab³). I'd have to manipulate the sample (say, studying the effects of Coke on people dying of thirst in the Sahara, or the effects of a Snickers bar on the mortality rate of tired drivers at 2 A.M.). I could also measure hundreds of different biomarkers and report only on the outcomes that support my bias. Or, like the elephant examiners we met in chapter four, I could perform honest research and still end up with conclusions that are incomplete and misleading because of the limited scope of my vision.

This is why we so frequently see conflicting research results in the media: the predominant research framework actually *encourages* such conflicts. This same reductionist framework is also why our society's beliefs about nutrition often seem so contradictory and confusing, whether we get them from textbooks, food packaging, or government messaging.

REDUCTIONIST NUTRITION IN THE SUPERMARKET AND THE HOME

Though reductionism originates in the lab, it pervades the public imagination as much as it does the thinking of academics. Because we scientists and researchers are considered “experts,” our worldview permeates our culture's understanding of nutrition at every level.

Pick up an elementary or high school nutrition textbook and you will inevitably find a list of known nutrients. There are about a dozen vitamins and minerals, perhaps as many as twenty to twenty-two amino acids, and three macronutrients (fat, carbohydrate, and protein). These chemicals and their effects are treated as the essence of nutrition: just get enough (but not too much) of each kind and you're fine. It's been that way for a long time. We're brought up thinking of food in terms of the individual

elements that we need. We eat carrots for vitamin A and oranges for vitamin C, and drink milk for calcium and vitamin D.

If we like the particular food, we're happy to get our nutrients from it. But if we don't like that food—spinach, or Brussels sprouts, or sweet potatoes—we think it's fine to skip it as long as we take a supplement with the same amounts of these nutrients. But even recent reductionist research has shown that supplementation doesn't work. As it turns out, an apple does a lot more inside our bodies than all the known apple nutrients ingested in pill form. The whole apple is far more than the sum of its parts. Thanks to the reductionist worldview, however, we don't really believe the food itself is important. Only the nutrients contained in the food matter.

This belief is reinforced every time we read the labels on food packages. Sometimes these lists are quite extensive; the typical food label lists a lot of individual nutrients, with precise amounts per serving shown for each component (see Figure 5-2).

I was a member of the 1990 National Academy of Sciences (NAS) expert panel assigned by the FDA to standardize and simplify the food-labeling program. Two schools of thought existed on our panel. One view favored using the label to tell customers how much of each of the

Nutrition Facts	
Serving Size: 2 fl. oz. (60 ml)	
Servings Per Container: about 13	
Amount Per Serving	
Calories 45	Calories from Fat 10
% Daily Value*	
Total Fat 1 g	2%
Sodium 30 mg	1%
Potassium 110 mg	3%
Total Carbohydrate 8 g	3%
Dietary Fiber 2 g	8%
Sugars 7 g	
Protein <1 g	
Vitamin A 10%	Vitamin C 50%
Iron 2%	Vitamin E 50%
Vitamin K 10%	Niacin 20%
Vitamin B ₆ 20%	Vitamin B ₁₂ 20%
Pantothenic Acid 20%	
Not a significant source of saturated fat, trans fat, cholesterol, or calcium.	
*Percent Daily Values based on a 2,000 calorie diet.	

FIGURE 5-2. A typical example of a food label⁴

many nutrients is inside. The other, to which I subscribed, intended to minimize quantitative information on the label. I believed that we would serve the public best by providing some general information, like a list of ingredients, while staying away from the finer details. (My school of thought lost, although our report did end up proposing a labeling model that was more focused than the original.)

Ingredients are important, and not just for avoiding ones to which you might be allergic. You probably don't want to eat foods with long lists of unpronounceable words, and I assume you'd like to know if your breakfast cereal contains large quantities of high-fructose corn syrup. But including fine-print details like the number of micrograms of niacin performs two disservices to the public that can lead to poor eating choices. First, it overwhelms consumers and causes most of them to ignore the labels entirely. Second, it implies that the nutrients included on the label (a minuscule percentage of the total known nutrients) are the only important ones—indeed, perhaps the only ones that exist.

This isn't the only way the government supports and furthers reductionist nutritional philosophy. A very public example is the effort expended for many years to develop a nutrient composition database that includes all known foods. Since the early 1960s, the U.S. Department of Agriculture has been working on an enormous database in which each food is accompanied by an extensive list of the nutrients it contains and their amounts. This database is now available on the Internet for the public's use, at <http://ndb.nal.usda.gov>.

Government scientists have also promoted reductionist nutritional policy through their nutrient recommendations, which focus on the quantities of each nutrient deemed important for good health—and these nutrient recommendations have a much further reach than an online database. Every five years, the NAS's Food and Nutrition Board reviews the latest science to update these recommendations. Generally known as recommended daily allowances (RDAs), they were revised in a 2002 report to provide not single-number RDAs, but ranges of intake to maximize health and minimize disease (now called recommended daily intakes, RDIs). Trouble is, RDIs still focus on individual nutrients. And these recommendations, expressed as numbers, now serve as quality control criteria for public nutrition initiatives like school lunch programs, hospital food guidelines, and other government-subsidized food service programs.

Armed with both these government recommendations and that vast nutritional database, consumers can now look up their RDIs and then cross-check them against the database to determine what foods to add or subtract in order to achieve proper nutrient intake. The RDI creators must wonder how our ancestors, without access to computers, were able to eat well enough to survive and reproduce!

Of course, nobody chooses their diet based on databases and RDIs. But quantifying foods this way reinforces the impression that this is the best way to understand nutrition, and the fear engendered by those reductionist tools leads many people to worry about not getting their daily nutrient allowances. Hence Americans spend \$25–\$30 billion or so each year (as of 2007) on nutrient supplements.⁵ Many consider the use of these products to be the essence of modern nutrition. Similarly, foods have long been fortified with specific nutrients like iron, selenium, calcium, vitamin D, and iodine, because certain areas of the world or groups of people suffer from deficiencies of them. In the case of serious nutritional deficiencies, like nineteenth-century British sailors suffering from scurvy due to the lack of vitamin C, or impoverished Third World villagers dying from protein deficiency, attention to individual nutrients makes some sense. In the case of malnutrition, a supplement can save lives in the short run by buying time to set up longer-term systems that provide sufficient and balanced nutrition from real food. But for most Americans who suffer from too much food and too much granular information about that food, this approach is misguided. It overwhelms us and keeps us, in motivational speaker Jim Rohn's memorable phrase, "majoring in minor things."

WRENCHES IN THE REDUCTIONIST MODEL

In short, virtually all of us, professionals and laypeople alike, talk about nutrition, study nutrition, sell nutrition, and practice nutrition in reference to specific nutrients and, oftentimes, to specific quantities. We fixate on the *amounts*. Vitamins. Minerals. Fatty acids. And of course, the biggest obsession of them all: calories.

We've seen where this obsession comes from, and it's easy enough to understand. After all, most people want to be healthy and feel good, and

we're taught that our health partially depends on getting precisely the right amount of these things into our bodies. So whether it's the obsessive calorie counting of Weight Watchers or the 40/40/30 absurdity of the Zone diet, we believe that the more accurately we track our inputs, the more control we have over the output: our health.

Unfortunately, that just isn't true. Nutrition is not a mathematical equation in which two plus two is four. The food we put in our mouths doesn't control our nutrition—not entirely. What our bodies do with that food does.

Wrench #1: The Wisdom of Our Bodies

Are you sitting down? Because I need to explain something that almost no one acknowledges about nutrition: there is almost no direct relationship between the amount of a nutrient consumed at a meal and the amount that actually reaches its main site of action in the body—what is called its *bioavailability*. If, for example, I consume 100 milligrams of vitamin C at one meal, and 500 milligrams at a second meal, this does not mean that the second meal leads to five times as much vitamin C reaching the tissue where it works.

Does this sound like bad news? To reductionists, it certainly does. It means that we can never know exactly how much of a nutrient to ingest, because we can't predict how much of it will be utilized. Uncertainty: a reductionist's worst nightmare!

Actually, this is very good news. The reason we can't predict how much of a nutrient will be absorbed and utilized by the body is that, within limits, it depends on what the body needs at that moment. Isn't that amazing? In more scientific language, the proportion of a nutrient that is digested, absorbed, and provided to various tissues and the cells in those tissues is mostly dependent on the body's need for that nutrient at that moment in time. This need is constantly "sensed" by the body and controlled by a variety of mechanisms that operate at various stages of the "pathway," from nutrient ingestion to nutrient utilization. The body reigns supreme in choosing which nutrients it uses and which it discards unmetabolized. The pathway taken by a nutrient often branches, and branches further, and branches further again, leading the nutrient through a maze of reactions

that is far more complex and unpredictable than the simple linear model of reductionism would suggest.

The proportion of ingested beta-carotene that is actually converted into its most common metabolite, retinol (vitamin A), can vary as much as eight-fold. The proportion converted also decreases with increasing doses of beta-carotene, thus keeping the absolute amounts that are absorbed about the same. The percentage of calcium absorbed can vary by at least two-fold; the higher the calcium intake, the lower the proportion absorbed into the blood, ensuring adequate calcium for the body and no more. Iron bioavailability can vary anywhere from three-fold to as much as nineteen-fold. The same holds true for virtually every nutrient and related chemical.

In brief, the relationship between amount consumed and amount used for virtually all nutrients is not a linear relationship. Although many professionals know this, few fully appreciate the significance of this complexity. It means nutrient databases are not nearly as useful as one might think. It also means reductionist supplementation with large doses of discrete nutrients does not guarantee the utilization of those nutrients. (In fact, our digestive processes are so complex and dynamic that super-dosing with a single nutrient all but guarantees an imbalance of some other nutrients, as we'll see in Wrench #3 later in this chapter.)

Wrench #2: The Variability of Foods

Not knowing how much of a given nutrient will be used by the body is only part of our uncertainty. The nutrient content of the foods we eat themselves varies far more than most of us realize. Look at the research just on one antioxidant vitamin, beta-carotene (and/or its related carotenoids). Beta-carotene content in different samples of the same food is known to vary three- to nineteen-fold, although it may be up to forty-fold or more, as was reported for peaches. That's right—you could hold a peach in each hand, and the one in your right hand could easily contain forty times more beta-carotene than the one in your left, depending on things like season, soil, storage, processing, and even the original location of the fruit on the tree. And beta-carotene is far from the only example. The “relatively stable” calcium content of four kinds of

cooked mature beans (black, kidney, navy, pinto) ranges 2.7-fold—from 46 to 126 mg—per cup.

The variation in food nutrient content and the variation in nutrient absorption and utilization by the body compound each other. A simple exercise might help to make the point. Suppose the amount of beta-carotene in a carrot varies about four-fold, and the amount of this uncertain proportion that is then absorbed across the intestinal wall into the bloodstream varies another two-fold. This means that the amount of beta-carotene theoretically delivered to the bloodstream from any given carrot on any given day might range as much as eight-fold.

These are huge but uncertain variations, and whether these ranges are two- or forty-fold, the ultimate message is the same: With the consumption of any particular food at any particular moment, we cannot know with any precision how much of any nutrient is actually available to our bodies, or how much our bodies actually use.

Wrench #3: The Complexity of Nutrient Interactions

But wait—there's more uncertainty! You may be surprised to learn that the three nutrients mentioned above can modify one another's activities. Calcium decreases iron bioavailability by as much as 400 percent, while carotenoids (like beta-carotene) increase iron absorption by as much as 300 percent. Theoretically, in comparing a high-calcium, low-carotenoid diet with a low-calcium, high-carotenoid diet, we might see an 800–1,200 percent difference in iron absorption. But even if this theoretical variation were only 100–200 percent, this is still huge; for some nutrients, tissue concentrations varying by more than 10–20 percent can mean serious bad news.

Interactions among individual nutrients in food are substantial and dynamic—and have major practical implications. An outstanding review by researchers Karen Kubena and David McMurray at Texas A&M University summarized the published effects of a large number of nutrients on the exceptionally complex immune system.⁶ Nutrient pairs that were found to influence each other and in turn, to influence components of the immune system include vitamin E–selenium, vitamin E–vitamin C, vitamin E–vitamin A, and vitamin A–vitamin D. The mineral magnesium influences the effects of iron, manganese, vitamin E, potassium, calcium, phosphorus, and sodium, and through them the activities of hundreds of

enzymes that process them; copper interacts with iron, zinc, molybdenum, and selenium to affect the immune system; dietary protein exerts different effects on zinc; and vitamin A and dietary fat affect each other's ability to influence the development of experimentally created cancer.

Even closely related chemicals within the same chemical class can greatly influence each other. For example, various fatty acids affect the immune system activities of other fatty acids. The effect of polyunsaturated fats (found in plant oils) on breast cancer, for example, is greatly modified by the amount of total and saturated fat in the diet.

The fact that magnesium has already been shown to be an essential part of the function of more than 300 enzymes speaks volumes about the possibilities for the almost unlimited nutrient interactions. The effects of these interactions on drug-metabolizing enzymes and on the immune system also apply to other complex systems, such as the hormonal, acid–base balance, and neurological systems.⁷

The evidence cited here represents only an infinitesimally small fraction of the total number of interactions operating every moment in our bodies. Clearly, the common belief that we can investigate the effects of a single nutrient or drug, unmindful of the potential modifications by other chemical factors, is foolhardy. This evidence should also make us extremely hesitant to “mega-dose” on nutrients isolated from whole foods. Our bodies have evolved to eat whole foods, and can therefore deal with the combinations and interactions of nutrients contained in those foods. Give a body 10,000 mg of vitamin C, however, and all bets are off.

THE POINTLESSNESS OF REDUCTIONIST PRECISION

Even in this discussion of the variability of nutrient absorption, you may have noticed, I've still toed a fairly reductionist line. I've examined variability in terms of single nutrients and how much their quantities vary in food and at their site of action in the body. As we've seen, consuming two nutrients simultaneously typically affects the utilization of both. This variation becomes orders of magnitude more complex and uncertain when combinations of a large number of nutrients are simultaneously consumed (also known as “eating food”). Now we're talking not just about three or

so different nutrients affecting each other and the various systems of the body; we're talking about all the active elements of a whole food. We simply cannot know how many kinds of chemicals are consumed in a single morsel of food or at a single meal or during the course of a day. Hundreds of thousands? Millions? The complexity increases virtually without limit.

If we had to rely on our brains to figure out what to eat, in what quantities, and in which combinations, or risk malnutrition or disease, the human race would have died out long ago. Luckily, our task is considerably simpler. When we eat the right foods, in amounts that satisfy but don't stuff us silly, our bodies naturally metabolize the nutrients in those foods to give us exactly what we need at any given moment.

Our bodies control concentrations of nutrients and their metabolites very carefully, so that the amounts available to particular sites of action in the body often rest within very narrow ranges. For some nutrients, concentrations must stay within these limits for us to avoid serious health problems and even death. In short, the body is able to reduce the highly variable concentrations of nutrients in food into much more stable concentrations in our tissues by sorting out what's necessary and what's excessive.

One way to gain perspective on this discussion is to consider the "reference" ranges of a few nutrients in our blood plasma, as illustrated in Figure 5-3. You may have seen these ranges on your clinical lab report at

Nutrient	Reference Range	Fold Difference
Sodium	135–145 mmol/L	1.07
Potassium	3.5–5.0 mmol/L	1.43
Chloride	340–370 mg/dL	1.09
Calcium (ionized)	1.03 mmol/L	1.23
Iron	9–21 μ mol/L	2.33
Copper	11–24 μ mol/L	2.18
Magnesium	0.6–0.8 mmol/L	1.33
Total protein	60–78 g/L	1.30
Vitamin A (retinol)	30–65 μ g/dL	2.17

FIGURE 5-3. Reference ranges for blood tests⁸

the doctor's office. Based on analyses of the blood of presumably healthy people, these ranges are generally considered "normal." But notice how narrow these ranges vary—only 1.1–2.3-fold, compared with the five- to ten-fold (or more) nutrient variation in food.

In short, your body is constantly monitoring and adjusting the concentrations of nutrients in the food you consume in order to turn massive variability into the narrower ranges it requires to be healthy.

CATCHING A BALL

This sounds like a lot of work for the body to be doing, I know. But that's what it's built for. That's what it does best. And it does it without requiring any amount of conscious intervention in the process.

Think about the simple act of catching a ball that someone has tossed to you. Do you have any idea how complicated that process is? First, your eyes have to notice the object and identify it as a ball and not, say, a swarm of hornets or a balloon filled with petroleum jelly. Then your eyes, working in binocular fashion, begin sending a dizzying array of data to your brain to help determine the size and velocity of the ball. Even if you failed high school geometry, your brain calculates its parabolic path. Even if you flunked physics, your brain calculates the mass, acceleration, and force of the ball. And while your brain is processing all this information, it's also communicating with the nerves that control your arm and hand, the stabilizing muscles of your back, neck, and legs, and the parasympathetic nervous system that may need to calm you down following the initial sight of an incoming projectile.

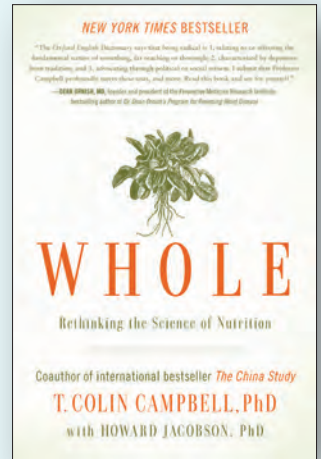
Your body is amazing at juggling all these myriad inputs and orchestrating a perfectly timed response: your arm reaches and your hand closes around the ball. But imagine if someone insisted that the right way to learn how to do this was to do all the math and physics. To measure and calculate the velocity, parabolic arc, wind speed, and everything else. School curricula around "catching" would proliferate; educators would argue about which methods work best. About 1 percent of students would excel at this methodology, while the vast majority of us would walk around getting pelted by balls that we couldn't catch if our lives depended on it. Whenever we came across cultures where everybody could catch, we

scientists would study their physiology and the materials used in making their balls and their public policy around the topic of catching, hoping to unravel the mystery and find the “cure” for ball dropping.

Focusing on individual nutrients, their identities, their contents in food, their tissue concentrations, and their biological mechanisms, is like using math and physics to catch balls. It’s not the way nature evolved, and it makes proper nutrition far more difficult than it needs to be. Our bodies use countless mechanisms, strategically placed throughout our digestion, absorption, and transport and metabolic pathways, to effortlessly ensure tissue concentrations consistent with good health—no database consultation required. But as long as we let reductionism guide our research and our understanding of nutrition, good health will remain unattainable.

Like what you read here and want more?

In *The China Study*, T. Colin Campbell (alongside his son, Thomas M. Campbell) revolutionized the way we think about our food with the evidence that a whole food, plant-based diet is the healthiest way to eat. Now, in *New York Times* bestseller *Whole*, he explains the science behind that evidence, the ways our current scientific paradigm ignores the fascinating complexity of the human body, and why, if we have such overwhelming evidence that everything we think we know about nutrition is wrong, our eating habits haven't changed.



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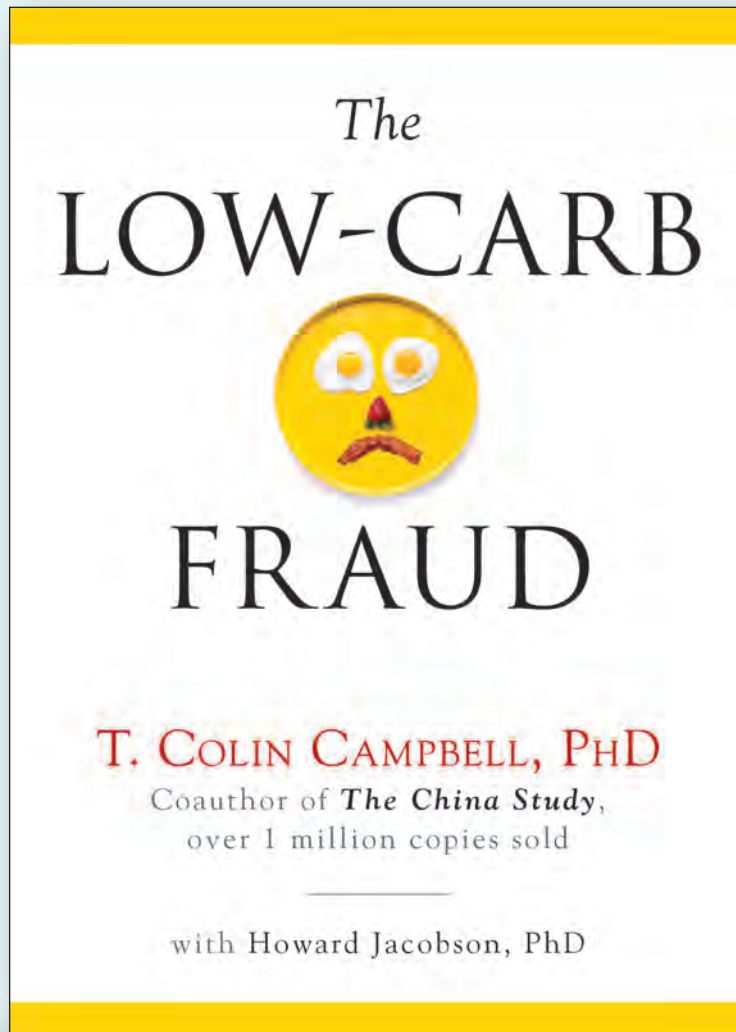
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» FROM *THE LOW-CARB FRAUD* «

The Paleo Diet

T. Colin Campbell, PhD and Howard Jacobson, PhD



APPENDIX: THE PALEO DIET

In the preceding text, I listed several variations on the low-carb diet, including Mary Dan and Michael Eades' *Protein Power*, Barry Sears' *Enter the Zone*, Peter D'Adamo's *Eat Right 4 Your Type*, Arthur Agatston's *South Beach Diet*, and Eric Westman's *The New Atkins for a New You*. But the version that has been getting the most attention in recent years is *The Paleo Diet*. First published in 2002 and written by Loren Cordain, an exercise physiology professor at Colorado State University, its basic message emphasizing high protein consumption is now offered in dozens of versions and formats, according to Amazon listings. That message, at its core, is low carb. It's especially so by whole food, plant-based diet standards: it allows for, and even encourages, a diet that includes as much as 30 to 50 percent of calories from fat and 30 to 50 percent from protein, leaving only a small amount of calories to be supplied by carbohydrates. (Compare that to the WFPB diet's 8 to 12 percent from fat and 8 to 12 percent from protein.) This "Paleo" book and its imitators may soon become the most popular contenders in the low-carb genre, if they aren't already. So what's my take?

There are a number of low-carb gurus offering advice on how to eat, but, to my knowledge, Cordain is one of only two who have published in the peer-reviewed experimental research literature

(the other being Eric Westman at Duke University), a practice that I strongly respect. So let's begin there, with Cordain's research.

Cordain bases his views on the highly conjectural dietary habits of the Paleo (Stone Age) people, as well as their contemporary counterparts, modern-day hunter-gatherers whose diets, he suggests, can be studied as surrogates for those eaten during Paleo times. However, he confesses in several places in his research papers⁶⁰ that estimates of dietary intakes in both of these groups are "subjective in nature." He also acknowledges that "scores" attempting to rate these presumed intakes from a very large compendium of 862 of the world's societies⁶¹ "are not precise." Further, he notes that the true "hunter-gatherer way of life"—one not influenced by Western life—"is now probably extinct." Thus researchers "must rely on indirect procedures to reconstruct the traditional diet of pre-agricultural humans." This is an honest but rather apologetic view of this research.

Prior to 2000, anthropologists seemed to have reached a consensus, arising from a 1968 publication by Richard Lee,⁶² that across fifty-eight different hunter-gatherer societies, only about 33 percent of the consumed foods were animal-based. In a research paper⁶³ in 2000, however, Cordain introduced a very different estimate. Unlike Lee, Cordain included fish in his definition of animal-based foods, and he added a larger number of hunter-gatherer societies for his review (229 as opposed to fifty-eight). Cordain then concluded that 66 to 75 percent of these "Paleo" diets represented animal-based foods—a proportion at least twice as high as Lee's earlier estimate.

By broadening the scope of his research in this way, Cordain substantially shifted the conversation. Now, instead of ancient dietary habits being regarded as primarily plant-based, they are considered to be animal-based. Cordain claims that his new estimate is supported by another, "more exacting" report⁶⁴ conducted on a smaller

sample of hunter-gatherer societies, which concluded that 65 percent of these diets were animal-based—very close to Cordain’s own estimate of 68 percent.

In his work, Cordain enthuses about humans being rather carnivorous, suggesting that “hominids may have experienced a number of genetic adaptations to animal-based diets early on in our genus’s evolution analogous to those of obligate carnivores such as the feline.”⁶⁵ He goes on to say that “even when plant food sources would have been available year round at lower [tropical] latitudes, animal foods would have been the preferred energy source of the majority of worldwide hunter-gatherers” and, further, that “the tissues of wild animals would have almost always represented the staple food for the world’s contemporary hunter-gatherers.” Like other low-carb proponents, Cordain regards the consumption of animal-based foods as an almost sacred part of the human tradition, with deep roots in our distant past.

Cordain’s new interpretation of early human diets has been challenged, on several grounds, by the scientific literature. First, according to anthropologist Katherine Milton,⁶⁶ Cordain’s assumption that contemporary hunter-gatherers are representative of historical hunter-gatherers could be a stretch. Most of the earlier hunter-gatherers had vanished or been pushed into marginal environments before present-day surveys on hunter-gatherers were collected (a view shared by Cordain⁶⁷). Accordingly, it is questionable if these more recent hunter-gatherers are the “survivors [representing] the primitive condition of mankind.”⁶⁸

Second, Cordain’s provocative idea that humans “may have experienced a number of genetic adaptations to animal-based diets” like carnivorous felines is really only a conjecture (note his use of “may have”). To my knowledge, there is no evidence that genetic

adaptations favoring the consumption of animal-based foods could have occurred on the scale required to convert early humans into true carnivores.⁶⁹

Third, humans cannot synthesize their own vitamin C, which is made only in plants. Other mammals that require vitamin C are all plant eaters; mammals whose diets are primarily carnivorous, in contrast, don't require it. Why would humans be any different?

Fourth, for most of their early history, humans did not have the speed or strength to catch and slaughter larger animals for food, making the possibility of diets high in animal protein rather low. (However, Cordain does make a reasonably plausible argument for the possibility that some prehistoric groups did regularly hunt animals, mostly dependent on the high energy return hunters would have received in exchange for the energy expended in hunting⁷⁰).

Fifth, human anatomy compares well with that of our nearest living nonhuman primate relatives, like chimpanzees, who do and always have mostly relied on plants for dinner. We share a similar gut anatomy (simple acid stomach, a small intestine, a small cecum, and a markedly sacculated colon), and the diets of these near-relative nonhuman primates contain only 4 to 6 percent animal-based food, most of which consists of termites and ants.⁷¹ (Cordain, in fact, presented a very similar estimate for the amount of meat in prehistoric humans' diets—3 to 5 percent—in a 2004 symposium in Denver, Colorado [a symposium that hosted a talk by me as well].)

These points taken together form a more than adequate argument against the reliability of Cordain's rather sweeping claims about the animal-food-oriented nature of prehistoric humans' diet. I cannot understand how the Paleo Diet enthusiasts are so certain of their views based on evidence that is so conjectural and uncertain—and so at odds with modern-day findings, obtained using research

methodologies that are far more direct and robust. Using crude approximations of what ancient people may have eaten as primary evidence for what we should be eating today makes very little sense to me. Using evidence obtained from contemporary hunter-gatherer people as a surrogate raises the same uncertainty, especially when these contemporary groups' diets are likely to have been greatly altered from those of earlier times.

Also add to these concerns the highly questionable nature of animal-versus-plant-food dietary estimates taken from archaeological studies, given that plant foods leave little or no trace in fossilized remains. Further, what do we know about the lifespans of prehistoric people? Did they live long enough to suffer the diet-dependent degenerative diseases of aging? Evolutionary arguments that draw conclusions about health impacts beyond the ages of fertility, after one is no longer able to pass on one's genes, are not especially convincing, and if our ancestors did not live long enough to develop these diseases, then fossil remains cannot be used as evidence to draw conclusions about their long-term health.

I agree that humans must have consumed *some* amount of animal-based food during their evolutionary past. But I don't agree that we should use highly questionable evidence from ancient history to vigorously assert the correct amounts of protein and fat to be consumed in the present day, when we have access to far superior research methodologies and experimentation.

Like other low-carb advocates, Cordain fails to explain or even mention evidence that sharply contrasts with his hypothesis, especially evidence that supports the health value of the whole-food, plant-based diet. For example, it has long been established that when diet and disease correlations for different populations are compared (as in cross-sectional studies), diets rich in fat and animal protein

(like the Paleo Diet) correlate strongly with higher rates of heart disease and cancers of the breast, colon, and prostate,⁷² to name only a few. (Although I mention cross-sectional correlation studies, I am not inferring specific causality from these correlations; I am only saying that this long-established and indisputable relationship—the high ratio of animal to plant foods, expressed in various ways—categorically refutes the main tenet of the Paleo/low-carb advocates.) I know of no studies, for example, showing that a Paleo/low-carb diet is associated with lower rates of these and other related Western diseases. There is absolutely no wiggle room here.

Another profound effect that Cordain and other low-carb advocates ignore concerns the substantial health benefits that are quickly observed when people adopt a WFPB diet. When switching to the WFPB diet from the current American diet that is only marginally less high in fat and protein than the Paleo/low-carb diet, the health benefits are broad, surprisingly rapid, and relatively free of side effects. I know of no evidence yet produced showing that the Paleo/low-carb diet can do this, marking a truly striking difference between the Paleo/low-carb diet and the WFPB diet.

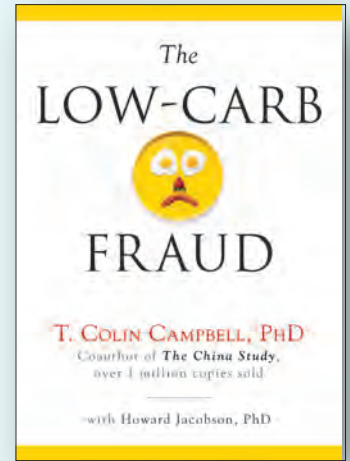
In general, when following the WFPB diet, serious illnesses like heart disease,⁷³ diabetes,⁷⁴ and certain cancers (including cancer of the liver⁷⁵ and pancreas⁷⁶ and melanoma⁷⁷) and autoimmune diseases are not only prevented but, more important, can be intercepted in their forward progress and even reversed (as reviewed in *The China Study*). The evidence on treating these diseases has been published in peer-reviewed professional journals, and I am confident that, in the near future, these same benefits will be shown for a broad spectrum of additional disease conditions.

You can read much more in *The China Study* (as well as in popular books by physicians Dean Ornish,⁷⁸ Caldwell Esselstyn,⁷⁹

John McDougall,⁸⁰ Neal Barnard,⁸¹ Joel Fuhrman,⁸² Pamela Popper,⁸³ among many others), but the evidence is remarkably consistent: when eating the WFPB diet—a diet that is *exactly the opposite* of the Paleo Diet—the benefits begin quickly, slowing and often reversing a broad spectrum of diseases and illnesses. Has a Paleo/low-carb diet ever been shown to do this? No. Not ever. And while more formal, peer-reviewed research still needs to be done on the comprehensive effects of the WFPB diet, the experimental, observational, and clinical evidence provides a remarkable degree of consistency. This type of evidence profoundly trumps any theoretically mechanistic or “archeological” evidence the Paleo Diet has to offer.

Like what you read here and want more?

In *The Low-Carb Fraud*, longtime leader in the nutritional science field T. Colin Campbell (author of *The China Study* and *Whole*) outlines where (and how) the low-carb proponents get it wrong: where the belief that carbohydrates are bad came from, and why it persists despite all the evidence to the contrary. The foods we misleadingly refer to as “carbs” aren’t all created equal—and treating them that way has major consequences for our nutritional well-being.



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Mouths to Feed

J. Morris Hicks

"WHAT'S GOOD FOR YOU IS ALSO GOOD FOR OUR PLANET. HEART DISEASE AND DIABETES ARE COMPLETELY PREVENTABLE AND EVEN REVERSIBLE FOR MOST PEOPLE TODAY BY CHANGING DIET AND LIFESTYLE. THIS BOOK SHOWS YOU HOW."

—**DEAN ORNISH, M.D.**, CLINICAL PROFESSOR OF MEDICINE, UC SAN FRANCISCO, AUTHOR, *THE SPECTRUM* AND *DR. DEAN ORNISH'S PROGRAM FOR REVERSING HEART DISEASE*

HEALTHY EATING HEALTHY WORLD

UNLEASHING THE POWER OF PLANT-BASED NUTRITION

J. MORRIS HICKS

WITH J. STANFIELD HICKS



FOREWORD BY

T. COLIN CAMPBELL, PHD

(*THE CHINA STUDY*)

AND NELSON CAMPBELL

6



MOUTHS TO FEED

“A hungry man is not a free man.”

—Adlai Stevenson

Living in a small coastal community in Connecticut, I understand the meaning of the phrase “It takes a village.” The quality of life for everyone is enhanced by the interests and actions of their neighbors; the whole can be greater than the sum of the parts. Located on a densely populated peninsula, my quaint New England village is almost like a small college campus where everyone eventually gets to know one another.

Let’s imagine that our village of 1,000 residents has 1,000 acres of arable land within walking distance. The citizens and their leaders must decide what to produce on that land: grain, cows, vegetables, chickens, fruit, and/or pigs? If they proceed according to the model in the world of today, they will use over 900 acres to produce lots of meat and dairy products for the 300 wealthiest residents. That will leave fewer than 100 acres to provide food for the remaining 700 people—clearly not enough land to survive, no matter what kind of

food they are eating. Sounds absurd, right? But that is the direction we are headed in the early part of the twenty-first century.

The world's model for feeding all her people has sprung a few leaks. As with oil and with fresh water, we are beginning to find that arable land is a finite resource. This problem, combined with the crises discussed in the previous two chapters on the environment and energy , points to the likelihood of much more world hunger in our future, not less. To summarize:

- The world population continues to grow, mainly in the developing world.
- Millions more are adopting the inefficient Western diet each year.
- The arable land available for farming grows smaller every day.
- More demand for food on less land drives prices higher.
- Future water shortages will limit productivity for all.
- The next rise in energy prices will exacerbate all of the above.

Something has to give. With the world's population projected to reach 9 billion by 2050, we're in for some serious price hikes in food unless the balance in what we eat changes soon. Clearly the path we're taking is not going to work in the future. The obvious solution would be a planned, systematic shift in the direction of consuming primarily plant-based food, but the reverse is happening. Millions of people in the developing world who grew up eating plants are now rushing to buy animal-based foods as soon as they can afford them.

As Julian Cribb explains in *The Coming Famine*, "The first thing people do as they climb out of poverty is to improve their diet. Demand for protein foods such as meat, milk, fish, and eggs from consumers with better incomes, mainly in India and China but also in Southeast Asia and Latin America, is rising rapidly. This in turn requires vastly more grain to feed the animals and fish."¹⁸⁶ As a person comes out of poverty, he naturally feels that "improving" his diet means copying what the wealthier people have been eating for a long time. Eric

Schlosser in *Fast Food Nation* provides another reason for the adoption of this new diet: “The anthropologist Yunxiang Yan has noted that in the eyes of Beijing consumers, McDonald’s represents ‘Americana and the promise of modernization.’”¹⁸⁷ Little do they know that while they may begin to crave the calorie-dense foods, “improvement” in terms of their health is not part of the bargain, and neither is their continued ability to be able to afford the “rich” foods they have recently learned to love.

The Poor Won't Go Quietly

The problem of food shortages is not just a hypothetical threat looming in the hazy future. Already the rich Western diet has negatively affected the poor. While the developed world was focused on the financial crisis that struck in 2008, many starving people of the world were stirred by a more basic fear: how to put food on the table.

World farm commodity prices skyrocketed almost 70 percent during 2007 and the first half of 2008. According to a February 2008 article in the *Guardian*, the UN’s World Food Programme officials say “the extraordinary increases in the global price of basic foods were caused by a ‘perfect storm’ of factors: a rise in demand for animal feed from increasingly prosperous populations in India and China, the use of more land and agricultural produce for biofuels, and climate change. The impact has been felt around the world. Food riots have broken out in Morocco, Yemen, Mexico, Guinea, Mauritania, Senegal and Uzbekistan.”¹⁸⁸ Note that Mexico, a prime beneficiary of the farming technology initiatives of the Green Revolution, is included in that list.

And the economic downturn of 2008 was hardly the only event to trigger a food crisis. The effect that one bad harvest for a major food exporter can have on the world’s food supply was amply shown after an unprecedented number of forest fires reduced Russia’s 2010 harvest

so much that it shut off all food exports. The *New York Times* reported one immediate repercussion: “Food prices rose 5 percent globally during August, according to the United Nations, spurred mostly by the higher cost of wheat, and the first signs of unrest erupted as 10 people died in Mozambique during clashes ignited partly by a 30 percent leap in the cost of bread.”¹⁸⁹ The world is a village indeed. As you can see from the headlines in the box, world hunger is nothing new, and the leaders of our global village have been talking about this topic for a long time. Even when there has been plenty of land, water, and energy available for growing food, hunger has been an issue for the poorest people in the world. But if the leaders of the past couldn’t solve the problem without the shortage of natural resources that we face today, how can we expect today’s leaders to solve it now?

A SAMPLING OF HISTORICAL HEADLINES

New York Times, October 14, 1945

WORLD HUNGER PUT AS CAUSE OF WARS

Secretary Anderson Hopes the Coming Meeting of UNFAO
Will Solve Food Problems

New York Times, November 11, 1958

Eisenhower Asks Crusade on World Hunger, Disease

Outlines a Program to Colombo Meeting for Expansion of Trade
With and Aid to the Under-Developed Lands

New York Times, February 4, 1978

Administration Plans to Set Up Commission on World Hunger

President Carter intends to establish a Commission on World Hunger

To be sure, the prospect of solving this problem anytime soon with current methods seems more remote than ever. The situation has become urgent and requires immediate action. Jean Ziegler, vice president of the UN Human Rights Council Advisory Committee, made

the following appeal to world leaders in January 2010: “In a world overflowing with riches, it is an outrageous scandal that more than 1 billion people suffer from hunger and malnutrition and that every year over 6 million children die of starvation and related causes. We must take urgent action now.”¹⁹⁰

A Little Background

Hunger is more than simply not getting enough calories; it also involves nutrient deficiencies, which take many lives. Providing the hard numbers, Ziegler reported in 2006 that mortality from malnutrition accounted for 58 percent of the world’s total mortality. “In the world, approximately 62 million people, all causes of death combined, die each year . . . In 2006, more than 36 million died of hunger or diseases due to deficiencies in micronutrients.”¹⁹¹ That computes to almost 100,000 people per day—that’s two people for every word in this book *every day*. Further, the World Health Organization reports that 3.7 billion people of the world’s current total of 6.7 billion are malnourished—the largest number of malnourished people in history.¹⁹²

The need for more food production was recognized as far back as the end of World War II. Even then, agricultural experts realized that the amount of arable land could not be increased dramatically, so scientists concentrated on improving crop yield instead. This movement led to what is known as the Green Revolution. A jump in production occurred after new hybrid strains were developed for such major crops as wheat, rice, and corn. These hardier varieties were introduced into developing countries during the 1960s and 1970s, along with a new emphasis on chemical fertilizers and irrigation.

The first major leap was the breeding of a dwarf strain of wheat by U.S. agronomist Norman Borlaug, winner of the Nobel Peace Prize in 1970. When this strain was introduced into Mexico, it resulted in

a doubling of the country's wheat crop. When famine threatened in India and Pakistan in the 1960s, Borlaug's new methods nearly doubled Pakistan's wheat yield between 1965 and 1970 and increased India's "from 12.3 million tons of wheat in 1965 to 20 million tons in 1970."¹⁹³ Equally revolutionary was the development by the International Rice Research Institute of a new variety of rice that would grow even when submerged in three feet of water. After it was introduced in the Philippines, the new hybrid produced five times as much rice as the country was producing before. In addition, its hardiness meant many new acres prone to seasonal flooding could be used for crop production.

These kinds of gains were encouraging at the time but have proven to be too little too late as the world's population continues to skyrocket. Since the 1970s, many of the initial gains of the Green Revolution have leveled off—dramatically in some cases. "For example, rice yields per acre in South Korea grew nearly 60 percent from 1961 to 1977, but only 1 percent from 1977 to 2000. Rice production in Asia as a whole grew an average of 3.2 percent per year from 1967 to 1984 but only 1.5 percent per year from 1984 to 1996."¹⁹⁴ The problem is that the population is growing at a much higher rate, and the percentage of those eating a meat-based diet is expected to rise from 33 to 40 percent by 2050. Where is the difference going to be made up? The problem is exacerbated by the fact that many farmers in developing countries have depleted their water resources in irrigating their crops, as noted in Chapter 4. This means that dramatic new improvements will likely not be found within the same amount of acreage.

An Unsustainable Model for Feeding People

No matter what level of humanitarian concern for the world's poorest people exists, with the dynamics in place today, the situation is

likely to get much worse before it gets better . The combination of more people, higher energy costs, and a shortage of arable land points to the fact that our feeding model is not going to get the job done in the future.

Let's take a look at our current model for the Western world—the same one that's rapidly being adopted in the developing world. By cycling our grain through livestock, we waste 90 percent of its protein, 96 percent of its calories, 100 percent of its fiber, and 100 percent of its carbohydrates.¹⁹⁵ Further, to feed a single person the typical Western diet (heavy with animal products) for a year requires 3.25 acres of arable land. To feed one vegan requires about one-sixth of an acre.¹⁹⁶ Thus, with the vegan diet, you can feed about twenty people with the same amount of land that is required to feed one person with the typical Western diet. As of July 2010, the U.S. Census reports that the total world population is 6.85 billion people;¹⁹⁷ the FAO reports that there are 7.9 billion acres of arable land.¹⁹⁸ This means there are 1.15 acres theoretically available to grow food for each human being on the planet today. What's wrong with this picture? If we have just over one acre of available arable land per person, it is obvious that everyone cannot eat the rich Western diet. There simply isn't enough land.

Mark Bittman emphasizes this point in his *New York Times* book review of *The Coming Famine*: “Mr. Cribb is reporting on the fate of a planet whose resources have, in the last 200 years, been carelessly, even ruthlessly exploited for the benefit of the minority. Now that the majority is beginning to demand—or at least crave—the same kind of existence, it's clear that, population boom or not, there simply isn't enough of the Euro-American way of life to go around.”¹⁹⁹

In *Why Your World Is about to Get a Whole Lot Smaller*, Jeff Rubin reports on World Bank president Robert Zoellick's 2008 warning of a mounting “human crisis.” He was referring to the millions of the world's poorest people who have been driven into malnutrition as a result of high food prices. “While people in the developed world

are focused on the financial crisis,' Zoellick said, 'many forget that a human crisis is rapidly unfolding in developing countries. It is pushing poor people to the brink of survival . . . There is only so much arable land on the planet. In fact, climate change may mean there is less of it all the time.'"²⁰⁰

The problem is made worse by the steady degradation of the world's arable land. Each year, the world loses over 24 million acres of arable land.²⁰¹ This is an area about the size of South Carolina. Causes are soil erosion, water shortages, climate issues, and deforestation. Most of this loss is attributable to the livestock industry, according to the 2006 UN Report *Livestock's Long Shadow*, covered extensively in Chapter 4. This steady loss needs to be evaluated against a steadily growing population. Both UN and U.S. officials now project that our population will continue to grow and will exceed 9 billion by 2050. For the past sixty years, our global population has increased by about 72 million people per year. That's 197,000 people per day—an amount equal to the entire population of Grand Rapids, Michigan!

And there's one more problem. Meat-based foods are also notoriously wasted by the wealthy, with up to one-third of the food simply spoiling before use or being thrown out because of expiration dates. One of the biggest problems with a meat-based diet is that meat spoils quickly, meaning that a great deal of this inefficiently produced food is simply thrown away. Julian Cribb points out the scale of the problem in Great Britain:

A former government food advisor, Lord Haskins of Skidby, who worked for one of the nation's largest food suppliers, had calculated that 60 million Britons were each year wasting around 20 million tonnes [22 million U.S. tons] of food—16 million tonnes in homes, shops, supermarkets, wholesalers, markets, and manufacturing establishments, and around 4 million tonnes on the farm or in transit. The average household could save \$1,000 a year on

food purchases if even a fifth of this wastage could be eliminated. The chief culprit, it turned out, was the use-by date, which was causing consumers to throw out one-third of all the food they bought.²⁰²

To summarize, we have more people, less arable land, more land required per person, and excessive spoilage and waste. As more of the world continues to move in the direction of the rich Western diet, the average acreage of land required per person will continue to grow, and that simply can't be accommodated. We have two choices. We either dramatically reduce the number of people on the planet (not so easy), or we start an immediate movement toward a global feeding model that maximizes the consumable calories from each acre of land. If enough people consumed a land-, water-, and energy-efficient plant-based diet, we could easily feed the world's future population on far less than half of the 7.9 billion acres of arable land available. As an added bonus, we would free up billions of acres that are currently used for growing food for humans and their animals, and that land could be returned to forests and other natural habitats and put to work restoring the biodiversity and ecological balance that has been slipping away for the past fifty years.

Our Feeding Model Will Change Eventually

In a world where the human population continues to add another Grand Rapids every day, a South Carolina-sized chunk of arable land is lost each year, and the developing countries steadily move toward a highly inefficient meat-based diet, we simply must start addressing the root causes of a rapidly approaching global feeding crisis. The first step is sharing the information with everyone. For many people, world hunger has always been out of sight and out of mind. The average

citizen of the Western world has no idea of the global consequences of what he has chosen to put on his plate.

Once enough people understand the “big picture” of how everything we’ve discussed fits together, a take-charge minority will begin making changes in their own lives and will continue to spread the word. They will form the first wave of the grassroots revolution that will inevitably lead to some big changes in the way we feed the human population of the world. Eventually, when a sufficiently large number of people join this movement, the world’s top leaders will have enough political support to make this effort public policy.

But for now, a grassroots mandate for change must be led by people like you and me—the informed minority who understands the gravity of what is at stake. Someone asked me recently, “Will our changing to a plant-based diet really do any good for the hungry? Or is this kind of like your parents saying that you must clean your plate because people are starving in China?” No, it’s not like that at all. Simple math shows that our current food model cannot possibly continue to feed the world. But the good news is that every person who chooses to replace the animal products on his or her plate with plant-based foods will personally free up several acres of arable land—enough land to feed another fifteen or twenty people.

When it comes to taking care of our environment and efficiently feeding our growing human population, our current feeding model is not going to survive for very much longer. As reported in the previously mentioned movie, *HOME*, “In just the last 50 years, humankind has inflicted more damage on the fragile harmony of nature than all the previous generations of humans combined for the past 200,000 years.” And much of that damage is directly related to how we have chosen to eat in the western world—a harmful, wasteful, and grossly unsustainable diet-style that (per calorie) requires 20 times more land, 20 times more fossil fuel energy, and 20 times more water than does the natural diet for our species—whole, plant-based foods.

Sometimes it's painful to learn the truth about such a crucial issue. You almost yearn for the carefree days when you were ignorant about the dilemma. But now that you understand the big picture, perhaps the joy of taking action and making a difference in this tragic problem will replace the pleasure of eating the unhealthy foods of your past.

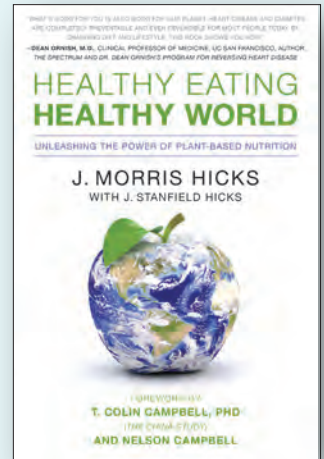
“Human rights rest on human dignity. The dignity of man is an ideal worth fighting for and worth dying for.”

—Robert Maynard

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ABOUT THE AUTHORS FEATURED IN

Benbella's Best of Plant-Based Eating and Living

Eric Brent, coauthor of *The HappyCow Cookbook* and founder and director of HappyCow, first had the idea to create an online guide to vegan restaurants in the late 90s. As a twenty-plus year vegan who has traveled to more than fifty countries, Brent knows firsthand how difficult it can be to find “safe” food upon arriving in a new city. More than a decade after launch, HappyCow.net garners about 850,000 visitors per month and helps vegans and vegetarians all over the world find great food nearby. Learn more at happycow.net.

Kim Campbell, author of *The PlantPure Nation Cookbook* is the daughter-in-law of Dr. T. Colin Campbell, considered by many as the “science father” of the rapidly growing plant-based nutrition movement. She works with her husband, Nelson, in a health and wellness business promoting a whole food, plant-based diet. This experience has allowed her to hone her culinary skills, especially in understanding how to create flavors, textures, and presentations that appeal to mainstream consumers experiencing a plant-based diet for the first time. Kim holds a bachelor’s degree from Cornell University in Human Service Studies, with a minor in Nutrition and Child Development. Learn more at plantpurenation.com.

LeAnne Campbell, PhD, author of *The China Study Cookbook*, lives in Durham, North Carolina. She has been preparing meals based on a whole-food, plant-based diet for almost twenty years. Campbell has raised two sons—Steven and Nelson, now eighteen and seventeen—on this diet. As a working mother, she has found ways to prepare quick and easy meals without using animal products or adding fat.

For more than 40 years, **T. Colin Campbell, PhD**, coauthor of *The China Study, Whole*, and *The Low-Carb Fraud*, has been at the forefront of nutrition research. His legacy, the China Study, is the most comprehensive study of health and nutrition ever conducted. Dr. Campbell is the author of the bestselling book, *The China Study*, and the Jacob Gould Schurman Professor Emeritus of Nutritional Biochemistry at Cornell University. He has received more than seventy grant-years of peer-reviewed research funding and authored more than 300 research papers. The China Study was the culmination of a twenty-year partnership of Cornell University, Oxford University, and the Chinese Academy of Preventive Medicine. Learn more at nutritionstudies.org.

Heather Crosby, author of *YumUniverse*, is a T. Colin Campbell Foundation certified plant-powerful wellness coach who has developed a unique and well-loved collection of over 500 gluten-free, plant-based recipes on her popular website YumUniverse.com. In an effort to kick medication and heal naturally from disease, she's been fine-tuning the maintenance of this lifestyle for almost a decade, and sharing what she's learned for years with thousands of folks all over the world. Learn more at yumuniverse.com.

J. Morris Hicks, author of *Healthy Eating, Healthy World*, began an intensive study in 2002 of what we eat from a global perspective—discovering many startling issues and opportunities along the way. Leveraging his expertise in making complex things simple, Hicks, a former senior corporate executive with Ralph Lauren in New York, is now delivering his powerful message in his book, on his daily blog, and in public speaking engagements—embarking on his new career as a writer, speaker, blogger, and consultant—promoting health, hope, and harmony on planet Earth. Learn more at hpjmh.com.

Howard Jacobson, PhD, coauthor of *Whole* and *The Low-Carb Fraud*, is an online marketing consultant, health educator, and ecological gardener from Durham, North Carolina. He earned a Masters of Public Health and Doctor of Health Studies degrees from Temple University, and a BA in History from Princeton. Howard cofounded VitruvianWay.com, an online marketing agency, and is a coauthor of *Google AdWords For Dummies*. Learn more at askhowie.com.

Glen Merzer, coauthor of *Better Than Vegan, Food Over Medicine* and *The HappyCow Cookbook*, is also coauthor with Howard Lyman of *Mad Cowboy*, and with Howard Lyman and Joanna Samorow-Merzer of *No More Bull!*, and with Chef AJ of *Unprocessed*. Merzer is also a playwright and screenwriter, having most recently completed a screenplay from *Mad Cowboy*. He has been a vegetarian for forty years and a vegan for the last twenty.

Christy Morgan (also known as The Blissful & Fit Chef), author of *Blissful Bites*, has worked in the natural foods industry since 2002. She's helped transform thousands of lives through cooking classes, food coaching, and wellness programs for corporations and individuals. Now a Certified Personal Trainer, she works with clients to help them reach all of their health and fitness goals. Visit her online at theblissfulchef.com.

Lindsay S. Nixon is the bestselling author of the Happy Herbivore cookbook series: *The Happy Herbivore Cookbook*, *Everyday Happy Herbivore*, *Happy Herbivore Abroad*, *Happy Herbivore Light & Lean*, and *Happy Herbivore Holidays and Gatherings*. As of January 2014, Nixon has sold over 200,000 copies of her cookbooks. Nixon has been featured on Dr. Oz and TheFoodNetwork.com, and she has spoken at Google. Her recipes have also been featured in The New York Times, VegNews, Vegetarian Times, Women's Health, Oprah.com,

Bethenny.com, Fitness.com, Bust.com, WebMD.com, and Shape.com, among many others. A rising star in the culinary world, Nixon is praised for her ability to use everyday ingredients to create healthy, low-fat recipes that taste just as delicious as they are nutritious. Learn more at happyherbivore.com.

Pamela A. Popper, PhD, ND, coauthor of *Food Over Medicine*, is a naturopath, an internationally recognized expert on nutrition, medicine, and health, and the Executive Director of The Wellness Forum. Dr. Popper serves on the Physician's Steering Committee and the President's Board for the Physicians' Committee for Responsible Medicine in Washington, D.C. Dr. Popper is part of Dr. T. Colin Campbell's teaching team at eCornell, teaching part of a certification course on plant-based nutrition. She has been featured in many widely distributed documentaries, including *Processed People* and *Making a Killing* and appears in a new film, *Forks Over Knives*, which played in major theaters throughout North America in 2011. Learn more at wellnessforum.com.

Tracy Russell, author of *The Best Green Smoothies* on the Planet, is one of the foremost experts on green smoothies and nutrition. She shares her wealth of first-hand information, research, and experiences with tens of thousands of people every day. Tracy is the author of one of the largest green smoothie websites, which she launched in 2009 to help others achieve a healthy lifestyle. She is also a contributor to the Whole Pregnancy website and has written guest articles for other blogs and magazines, as well. Learn more at incrediblesmoothies.com.

Del Sroufe, author of *Better Than Vegan*, has worked in vegan and vegetarian kitchens for more than twenty-three years, most recently as chef and co-owner of Wellness Forum Foods, a plant-based meal delivery and catering service that emphasizes healthy, minimally processed foods. He teaches cooking classes and is also the author of the bestselling *Forks Over Knives: The Cookbook*. He has also contributed recipes to *Food Over Medicine* by Dr. Pamela A Popper and Glen Merzer. Visit Del online at wellnessforumfoods.com.

Laura Theodore, author of *Jazzy Vegetarian Classics*, is a television and radio host, vegan chef, sustainable lifestyle blogger, passionate cookbook author, award-winning jazz singer and actor, and proud creator of the Jazzy Vegetarian brand. Theodore is presently the on-camera host, writer, and co-producer of the Jazzy Vegetarian television show on Public Television, coming into its third season. She hosts the weekly podcast show, "Jazzy Vegetarian Radio," a talk/music format that focuses on easy-to-prepare, plant-based recipes, eco-entertaining tips, and celebrity interviews. Laura has been featured in the *New York Times*, *USA Today*, *New York Daily News*, *New York Post*, *VegNews*, *Variety*, *Time* magazine, and *Family Circle*, and on PBS Food, Vegetarian Times online, and JazzTimes, among others. Learn more at jazzyvegetarian.com.

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Ajvar (Serbian Red Pepper Spread)

A Taste Of India Artichoke Dip

Almond-Cardamom Cream Chia Pudding With Fresh Berries

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Balsamic Glazed Brussels Sprouts

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Blueberry Bundt Cake

Buddha Lentil Burger

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The Green Machine

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Zucchini-Orange Cupcakes With Vanilla Cream Cheese Frosting