



Rose

Varieties

There are more than 5000 varieties of roses; only a few give the fragrance sought by perfumeries.

Two types of essential oil producing roses are cultivated in the Valley of the Roses in Bulgaria. The *Rosa damascena* forma *triginipetala* is the pink/light red Damask rose, and the *Rosa damascena* var. *alba* (*Rosa alba*) is the white rose. The Damask rose is the most important; it yields a higher quantity of oil and many people consider its quality superior. The white rose is a sturdier crop and is sometimes planted around the Damask roses, and at higher elevations where the pink rose does not survive.

Older varieties of roses include the *Rosa damascena*, *Rosa centifolia* and *Rosa bourbonia*. These three roses play an important role in India's past and present rose industry

History

The *Rosa damascena* was brought to the Valley of the Roses from Tunisia in 1420. Roses had been well established throughout this area of the Turkish Empire for several centuries before this.

Quantities

1000 kilos of flowers (1 metric ton) consists of 400,000 individual flowers. It takes 3500 kilos of flowers to produce 1 kilo of oil. Hence it takes 1,400,000 handpicked blossoms to produce 35 ounces of oil. It takes 40,000 blossoms to make 1 ounce of oil. It takes 67 blossoms to make 1 drop of oil (600 drops in an ounce).

A well managed rose garden produces from 1250-1650 kilos of flowers per acre. It requires an average of 3500 kilos of flowers to make 1 kilo (35 ounces of otto). Thus it requires 2.2-2.8 acres of land to produce 1 kilo of oil.

Harvesting

In the Valley of Roses, the harvest season begins with the opening of the flowers around the second week of May, and usually lasts 20 – 25 days. The picking of flowers

begins at 5:00 am (the oil content is highest at 2 am) and continues until around 10 am. The harvest should end while the dew is still fresh on the petals. At the peak of harvest the picking can continue into the afternoon, but there is a considerable loss of volatile oil content in the flowers due to evaporation by the sun's rays.

Distillation

Essential oil is extracted by hydrodistillation or steam distillation of the rose petals ; concrete and absolute is made by the extraction of the rose petals with solvents. Distillation of rose attar requires 15 to 25 days of distilling fresh roses into sandalwood oil. This process is rarely done in modern times, but is being revived.

Ruh Gulab

“Ruh” is an Arabic word meaning “pure essence,” and “gulab” means “rose water.” It is procured through traditional hydro-distillation processes using copper vessels. The oil produced is almost free of stearoptenes.

Stearoptenes

Stearoptenes are the waxy substances found in rose otto which cause the oil to congeal when the temperatures become a little cool. They have little odor, but provide some fixative value in the Bulgarian and other rose oils. Stearoptenes comprise 20-30% of the rose oil coming from countries like Bulgaria.

Uses

Rose play an important role in the economic, social, spiritual lives of people in India. They are used in the creation of garlands, gulkand (medicinal rose jam), rose otto, rose attar and rose water.

Rhythmic emission of fragrance molecules

Floral volatiles are emitted rhythmically, with maximum peaks coinciding 8-10 h into a 12-h photoperiod. For some compounds a secondary, nocturnal peak was apparent. Rhythms appeared to be regulated endogenously: rhythmic emission continued upon exposure to continuous light or continuous darkness. Additionally, emission continued after flower excision. These results suggest that glycosylated volatiles stored within petals may be a source of rhythmically emitted volatiles. 2-Phenylethanol is the major volatile emitted in addition to monoterpenols, oxidised monoterpenols, monoterpenes and aromatic compounds.

(Rhythmic emission of floral volatiles from *Rosa damascena* semperflorens cv. 'Quatre Saisons'. Picone JM, Clery RA, Watanabe N, MacTavish HS, Turnbull CG. Department

of Agricultural Sciences, Imperial College London, Wye Campus, TN25 5AH, Kent, UK)

Perfume / Chemistry

Called "the supreme bridging oil" for its function as a middle note.

Chemists have known for over 100 years that the main constituent of rose oil is citronellol, but it wasn't until work in the 1960's & 70's that the trace constituents so essential to a rose fragrance were reported.

The main constituent is citronellol, but the fragrance comes primarily from its trace constituents. Bulgarian rose oil has over 275 constituents, Damascenone is one of the most important. Although Damascenone constitutes only a minor percentage of rose oil, it contributes the maximum percentage of odor contribution. The rose ketones beta-Damascenone and beta-Damascone are two of the most important chemicals in the fragrance and flavoring industries.

Beta-damascenone is also found in grapes, apples, buckwheat honey.

An "Odor unit" value is assigned based on dividing the concentration of a component (in ppb) by the components detection threshold level (in ppb).

$$\text{Odor Unit} = \frac{\text{concentration of constituent (ppb)}}{\text{odor threshold (ppb)}}$$

Component	% of Oil	Threshold in ppb	Odor Units x 10 ⁻³	Rel. % of odor units
(-)-Citronellol	38	40	9500	4.3
C14 - C16 Paraffins	16	-	-	-
Geraniol	14	75	1860	0.8
Nerol	7	300	233	0.1
Phenethyl alcohol	2.8	750	37	0.016
Eugenol methyl ether	2.4	820	29	0.013
Eugenol	1.2	30	400	0.18
Farnesol	1.2	20	600	0.27
Linalool	1.4	6	2300	1.0
(-)-Rose oxide	0.46	0.5	9200	4.1
(-)-Carvone	0.41	50	82	0.036
Rose furan	0.16	200	8	0.003

beta-Damascenone	0.14	0.009	156000	70.0
beta-Ionone	0.03	0.007	42860	19.2

The minor constituents beta-damascenone and beta-ionone provide a significant majority of the odor contribution.

Medicinal Uses

Rose oil has a history of medicinal use dating back at least 5,000 years.

Anti-depressant

A gentle but potent antidepressant. Brings joy to the heart, promotes love. Helps recovery from sadness and grief. It reduces fear and drives away melancholy. For massage oils for sensitive people.

Anti-inflammatory

The traditional Indian Ayurvedic medical practice uses oral rose oil for the treatment of a variety of inflammatory conditions. The petals are used as infusion for internal inflammations, headaches, throat inflammations. A specific for hangovers.

Rosewater is good compress for conjunctivitis, infected wounds, fevers, and in vaginitis. Good for gingivitis and teething problems. Rose honey calms and reduces inflammations.

Anti-spasmodic

Beta-damascenone extracted from the plant *Ipomoea pes-caprae* has antispasmodic potencies in the same range as that of papaverine, a general spasmolytic agent. It is possible that beta-damascenone has anti-inflammatory activity due to anti-spasmodic action on vascular tissue.

(Antispasmodic activity of beta-damascenone and E-phytol isolated from *Ipomoea pes-caprae*. Pongprayoon U, Baekstrom P, Jacobsson U, Lindstrom M, Bohlin L. Department of Pharmacognosy, Uppsala University, Sweden.)

High in linoleic acid

The essential lipid linoleic acid present in cane molasses has antitumor effects. Such lipids are also found at high concentrations in rose oil, which. It has also been suggested that rose oil may be valuable for human consumption because of its high unsaturated lipid content.

Anti-bacterial

Rose oil is a potent inhibitor of the growth of *Helicobacter pylori*, implicated in the etiology of gastric cancer. Therefore, rose oil may exert a "sanitizing" effect in the gut.

Anti-bacterial for plant diseases

Rose oil has antibacterial effects against three strains of *Xanthomonas axonopodis*, and may be a potential control agent in the management of the disease in tomato and pepper plants.

(Antibacterial activity of *Rosa damascena* essential oil. Basim E, Basim H. University of Suleyman Demirel, Faculty of Agriculture, Department of Plant Protection, Isparta, Turkey.)

Anti-viral

Apply oil undiluted on shingles.

Anti-anxiety properties

Rose oil inhalation produced an anxiolytic-like effect similar to diazepam (anxiolytic reference drug) in adult male rats.

(Anxiolytic-like effects of rose oil inhalation on the elevated plus-maze test in rats. de Almeida RN, Motta SC, de Brito Faturi C, Catallani B, Leite JR. Department of Physiology and Pathology/LTF, Universidade Federal da Paraiba-Caixa, P.O. Box 5009, PB 58051-970, Joao Pessoa, Brazil)

2-phenethyl alcohol and citronellol were determined to be the pharmacologically active constituents of anti-anxiety-like effect of rose oil.

(Anticonflict effects of rose oil and identification of its active constituents. Umezu T, Ito H, Nagano K, Yamakoshi M, Oouchi H, Sakaniwa M, Morita M. Endocrine Disruptors and Dioxin Project Group, Japan)

Anti-stress properties

A mild sedative which soothes the nervous system. Very valuable for conditions of stress affecting the circulatory, digestive, and nervous systems.

Fragrance inhalation of essential oils may modulate sympathetic activity in normal adults. Inhalation of rose and patchouli oil caused a 40% decrease in relative sympathetic activity in normal adult subjects using both power spectral analysis of blood pressure fluctuations and measurement of plasma catecholamine levels; inhalation of rose oil caused a 30% decrease in adrenaline concentration. Fragrance inhalation of

essential oils, such as pepper oil, estragon oil, fennel oil or grapefruit oil, resulted in 1.5- to 2.5-fold increase in relative sympathetic activity.

Effects of fragrance inhalation on sympathetic activity in normal adults. Haze S, Sakai K, Gozu Y. Product Development Center, Shiseido Co., Ltd., Hayabuchi, Yokohama, Japan)

Reduces hyperlipoproteinaemia and arterial hypertension

This study involved thirty two patients with hyperlipoproteinaemia and arterial hypertension, but who did not require antihypertensive therapy. Girosital capsules, each containing 68 mg Bulgarian rose oil, 30,000 IU vitamin A and 250 mg sunflower seed oil were administered twice daily before meals for 110 days. It was found that Girosital had a marked hypolipidaemic effect. Its hypocholesterolaemic action was manifested after 20 days in Type IIa patients and appeared later and less marked in Type IIb subjects. Girosital significantly reduced hyperlipoproteinaemia without any dietetic changes and with preservation of body weight. It was tolerated well, with no side effects or contraindications for its use.

(Girosital. Clinical trial in primary hyperlipoproteinaemia.

Kirov M, Koev P, Popiliev I, Apostolov I, Marinova V Medico Biologic Information)

It has a pronounced effect on the circulatory system, promotes circulation, cleanses the blood, relieves heart congestion, tones the capillaries.

Digestive

Strengthening the digestive system,. Petals are used as an adjunct in digestive formulas.

Petals are laxative. A syrup made from the petals of rosa centifolia is used to treat constipation in infants.

Tonic

Regenerates ojas (nutrient essence). Tridoshic. Used in Ayurveda with sandalwood as an aphrodisiac oil. It increases semen. A specific treatment for male infertility is regular massage with 10d rose in one ounce sweet almond. Relaxes adrenal and nervous systems.

Petals are made into a preserve and used as a tonic that helps to put on weight.

Hormonal benefits

Balancing to the female hormonal system. Cleanses and strengthens the uterus, regulates menstruation, relieves cramps. A gentle cleansing emmenagogue. Relieves mood swings and supports women during childbirth.

Using essential oils in childbirth

A report on a six month evaluation of the use of essential oils during labor at a maternity hospital involving over five hundred women. The essential oils used were chamomile, clary sage, eucalyptus, frankincense, jasmine, lavender, lemon, mandarin, peppermint and rose. The evaluation of both the women and the midwives were recorded regarding the effectiveness of the oils. Administration of the oils was by different methods including inhalation, addition to bath water and massage (2ml oil in 50 ml carrier oil). Essential oil combinations and their use at specific stages during labor were commented upon. A high degree of overall satisfaction by mothers and midwives on the use of aromatherapy during labor/ delivery was noted. The structure of the evaluation did not allow conclusions to be made concerning the effectiveness of aromatherapy. Botanical sources of the essential oils were not stated.
(Using aromatherapy in childbirth. Burns E, Blamey C Nursing Times)

Children

One of the least toxic of the oils. Ideal for massage and children's and babies' skin care. A good baby oil is 3 ounces almond oil with 1 - 2 drops rose and 1 - 2 drops Roman chamomile oils.

Skin benefits

Unsurpassed as a beauty oil. Heals and helps every skin type, especially infected, dry, and sensitive skin. Rosewater is an excellent skin lotion. Helps cell regeneration.

Equal parts of rose water and glycerin is a perfumed lotion for chapped hands, lips, and face.

When used externally, it is a cooling, non-irritating and slightly astringent collyrium.

Warnings

Contact dermatitis from using a commercial cologne has been reported. Patch testing gave positive reactions to Bulgarian rose oil and geraniol. It was the first time that a person had tested positive to Bulgarian rose oil in 326 cases of suspected dermatitis. There were no other previously reported cases of dermatitis to the damask rose family. (Contact dermatitis from geraniol in Bulgarian rose oil. Vilaplana J, Romaguera C, Grimalt F Contact Dermatitis)

Edible Uses

Petals are the source of 'attar of roses' and 'rose water', and are used as a flavoring for drinks, sweets, baked goods, ice cream etc. The petals are also used to make jam. The leaves are used as a seasoning. The seed is a good source of vitamin E, it can be ground into a powder and mixed with flour or added to other foods as a supplement. The blossoms are used for scenting tea. The petals are preserved in sugar and used as a delicacy.

Fruit: many rose species are a very rich source of vitamins and minerals, especially in vitamins A, C and E, flavonoids and other bioactive compounds. It is also a fairly good source of essential fatty acids, which is unusual for a fruit. It is being investigated as an anti-cancer food.

Gulkand: Rose petal confection

One of the most delicious Ayurvedic preparations known to humanity. It is made primarily of rose petals collected at their peak condition, and other rejuvenating herbs. Gulkand has been traditionally used as a cooling tonic to combat fatigue, lethargy, muscular aches, biliousness, itching, and heat-related conditions. It is also naturally rich in calcium and has antioxidant properties. It can be used year-round by persons of all constitutions, especially Vata and Pitta.

Recommended Use: 1 tsp. In the morning and evening

A recipe for Gulkand

125 gms. Rose petals (dark red roses); 2 cups sugar; 1 cup lemon juice; 1-1/2 cups water; 1/2 tsp. pectin

Pull out petals of roses; trim out any spoiled or dried ones. Wash and rinse, drain out excess water. Put lemon juice, water, sugar, and petals in a large pan. Stirring continuously, heat till sugar dissolves. Once boiling starts, simmer covered, for 30 minutes. Dissolve pectin in 2 tbsp of liquid from pan. Add to mixture. Take off fire. Stir till well dissolved. Return to heat, bring to a boil, simmer one minute. Pour into hot sterilized jar, cool, seal. Refrigerate after opening seal. Shelf life: 3 months approx.