



neroli

Citrus x aurantium L.

by Salvatore Battaglia

The sweet scent reaches deep into the soul to stabilize and regenerate. For long standing psychological tension, exhaustion and seemingly hopeless situations, the oil [neroli] strengthens and brings relief. For people who are thin skinned, neroli can strengthen their inner being and build a protective shield. Neroli offers the gift of strength and courage that helps us see life's beauty.¹

Fischer-Rizzi perfectly describes neroli as the 'rescue remedy' of essential oils.

Synonyms

Orange flower, orange blossom, neroli bigarade

Family

Rutaceae

Botany and origins

Bitter orange is an evergreen tree with long but not very sharp spines and very fragrant flowers. It is a native of southern China and India.²

Neroli oil is produced from the flowers of several citrus species: the oil obtained from bitter orange is called neroli bigarade oil or orange flower oil, the oil from sweet orange flowers is called neroli Portugal and the oil from lemon

flowers is called neroli citronier.³

Neroli bigarade is produced in the south of France, Italy, Tunisia, Morocco, Haiti, Guinea, Comoro Islands and Algeria. Orange flowers must be distilled immediately after being picked in order to avoid decay and any unpleasant off-notes due to decay processes. After the processing of the flowers, the distillers usually distill the leaves since the trees are trimmed in the process of harvesting the flowers.⁴

As neroli oil is slightly water soluble, the water remaining after the distillation of neroli essential oil contains traces of neroli oil. This is sold as orange flower water, which is used in cosmetics and in food flavouring. Orange flower water is often solvent extracted to recover the oil which is known as orange flower water absolute. This oil has dark to brownish yellow colour with an intense floral odour. It is used in perfumery.³

Method of extraction

Neroli essential oil is obtained from the freshly picked flowers of *C. aurantium* var. *amara* by steam distillation.

Characteristics

Neroli oil is a pale yellow mobile oil which tends to become darker and more viscous with age. It has a powerful, light and refreshing floral top note with very little tenacity. Arctander states that the keeping qualities of neroli are very poor and its odour loses its freshness after a few months if the oil is not stored correctly.³

Chemical composition

The chemical composition of neroli from Egypt was reported as follows:
α-pinene (4.26%), camphene (5.5%), sabinene (2.55%), β-pinene (8.67%), myrcene (2.15%), δ-3-carene (2.46%), limonene (22.43%), terpinene (4.14%), α-terpineol (1.87%), linalool (2.52%), linalyl acetate (0.87%), geraniol (1.02%), nerol (6.97%), citronellol (1.87%), citral (2.41%), β-citral (1.87%), methyl anthranilate (1.89%).⁴

Adulteration

Arctander states that artificial neroli oils are very common. They may be composed of terpeneless petitgrain oil, bitter

orange oil, indole, linalyl acetate, linalool, methyl-beta-naphthyl ketone, decanal, nonanal, decanol, nonanol, nerol, nerolidol, isojasmane, hydroxycitronellal-methyl-anthranilate, phenylethyl alcohol, menthanyl ketone, nopyl acetate, expressed or terpeneless lime.³

Lis-Balchin states that it is seldom possible to find a decent neroli oil due to the high cost of production and the fact that it is so commonly adulterated.⁵

Neroli is commonly adulterated with geraniol from palmarosa, linalool from rosewood, sweet orange oil, citral from *Litsea cubeba* oil and Paraguay petitgrain. It is also blended with methyl-*n*-methyl anthranilate, methyl anthranilate, synthetic phenyl ethyl alcohol and synthetic indole.⁶

History

The bitter orange was first cultivated in the Mediterranean by Arabs in the tenth and eleventh centuries. The oil was first distilled in the early sixteenth century.² Neroli is named after the seventeenth century Italian Princess of Nerola, Anna Maria de La Tremoille, who wore the oil in her gloves.¹

Traditional medicine

The flowers and the oil have been traditionally used for gastrointestinal complaints, nervous conditions, gout, sore throat, as a sedative and for sleeplessness.²

Food, perfumery and flavouring

Neroli oil is one of the key essential oils in the classic eau de cologne, along with lavender, bergamot, lemon and rosemary oils. This cologne was valued as a gentle tonic to the nervous system.⁷

Orange blossom water has traditionally been used in Europe in cooking and in skin care preparations. It is especially soothing and anti-inflammatory and has a calming and uplifting effect similar to the essential oil.⁷

Pharmacology and clinical studies

Many pharmacological studies involving neroli essential oil have been published. A systemic review of these studies will not be attempted. Rather, I have chosen a selection of studies that support the traditional and clinical uses.

Anticonvulsant activity

Neroli oil possessed biologically active constituents that had anticonvulsant activity in mice.⁸

Antifungal activity

The essential oils from the peel, leaves and flowers of *C. aurantium* var. *amara* were tested for their antifungal activity against two plant pathogenic fungi *Penicillium digitatum* and *Penicillium italicum*. The oil that showed the best activity was neroli oil.⁹

Antimicrobial activity

Neroli oil exhibited strong antibacterial activity against *Pseudomonas aeruginosa*. It also exhibited a very strong antifungal activity compared with the standard antibiotic (Nystatin).¹⁰

Anxiolytic activity

A study examined the effects of an aromatherapy blend of lavender, Roman chamomile and neroli with a 6:2:0.5 ratio on the anxiety, sleep and blood pressure of percutaneous coronary intervention patients in an intensive care nursing care. Participants received 10 treatments before their medical intervention and the same essential

oils were used another 10 times after the medical intervention. The results confirmed that aromatherapy effectively reduced the anxiety levels and increased the sleep time of the patients admitted to the ICU.¹¹

A randomised clinical trial examined the role of neroli oil to alleviate anxiety during the first stage of pregnancy. The results of the trial confirmed that neroli was able to significantly lower anxiety.¹²

The inhalation of neroli oil was compared with Xanax, an anxiolytic drug. The in vivo study involving animals confirmed that neroli oil had a similar anxiolytic affect to Xanax.¹³

Cardiovascular system

Neroli was effective in diminishing the amplitude of heart muscle contraction, benefiting people who suffer from palpitations or other types of cardiac spasms. The oil was found to reduce the symptoms associated with post-cardiac surgery patients.¹⁴

Hypotensive activity

A study examined the effects of an aromatherapy blend of lavender, ylang ylang, marjoram and neroli (20:15:10:2) in prehypertensive and hypertensive subjects. The placebo group was asked to inhale an artificial fragrance for 24 hours and a control group received no treatment. The daytime systolic blood pressure during the 24-hour ambulatory blood pressure measurements of the aromatherapy group had significant decreases in comparison with the measurements of the placebo group and the control group. There was no significant difference in the night time diastolic blood pressure.¹⁵

Menopausal symptoms

Sixty-three healthy postmenopausal women participated in a randomised controlled trial which investigated the effects of inhalation of neroli oil on menopausal symptoms, stress and oestrogen. Compared with the control group, the neroli group showed significant improvements. Systolic blood pressure was significantly lower in the group inhaling 0.5% neroli oil than in the control group. The neroli group also had significantly lower diastolic blood pressure and improved serum cortisol and oestrogen concentrations. It was concluded that inhalation of neroli oil helps relieve menopausal symptoms, increase sexual desire and reduce blood pressure in postmenopausal women.¹⁶

Psychological activity

A randomised controlled trial was conducted in an intensive care unit using neroli oil. One hundred post-cardiac surgery patients were split into four groups. Group one was control group with no intervention; group two received a talk; group three had a 20-minute foot massage with plain vegetable oil; and group four had a foot massage with a 2.5% neroli in a massage oil. The study confirmed that a significant psychological benefit was found in both massage groups. A five-day follow up questionnaire confirmed that the patients perceived more psychological benefit from neroli massage than compared to the massage with plain vegetable oils.¹⁷

The effects of the ambient odour of lavender, neroli and placebo were examined for their relaxing, stimulating or no effect on mood. Relaxing odours decreased heart rate and skin conductance, while

stimulating odours had the reverse effects.¹⁸

Properties

Antidepressant, antiseptic, antispasmodic, bactericidal, carminative, cicatrisant, cordial, deodorant, digestive, nervine^{7,19,20,21}

Aromatherapy uses

Baby remedy

Holmes recommends using orange flower water for babies and infants. It may be used in a humidifier, in their bath water or by adding a teaspoon to the feeding bottle. It makes a very soothing, digestive, carminative remedy for infant's colic and its sedative action will help them sleep.²²

Cardiovascular system

Neroli oil is beneficial for the heart since it regulates heart rhythm and helps to reduce cramp-like nervous heart conditions.⁶ The oil is indicated for the treatment of hypertension and palpitations.^{11,20}

Digestive system

Neroli oil may be used to relieve spasms of the smooth muscles of the digestive system. It is beneficial in the treatment of chronic diarrhoea, especially when it arises from nervous tension.¹⁹

Nervous system

Neroli oil is regarded as one of the most effective sedative and antidepressant remedies and is recommended for the treatment of insomnia and states of anxiety and depression.^{7,19}

Davis states that it can be very effective to reduce anxiety before any stressful event, such as an interview, examination, or public appearance.¹⁹ Schnaubelt recommends neroli oil for nervous type individuals who are exhausted.²³

Psychological

Mojay recommends neroli oil for individuals who are emotionally intense and who are sometimes unstable and are easily alarmed and agitated.²¹ Holmes describes neroli as promoting clarity, sensitivity and space and describes it as enhancing the 'lightness of being'.²²

Skin care

In skin care, neroli oil is regarded as being non-allergenic and is recommended to reduce redness and irritation. It is beneficial for all skin types, especially dry sensitive skin with broken capillaries.^{19,20}

The oil is reputed to having rejuvenating effect on the skin as it has an ability to stimulate the growth of healthy new cells.¹⁹

Energetics

Neroli oil clears heat, relaxes the nerves and uplifts the spirits.^{21,22} Mojay describes neroli oil as one of the best oils to calm and stabilise the Heart and mind. He explains that neroli is particularly beneficial for hot, agitated conditions of the Heart characterised by restlessness, insomnia and palpitations.²¹

Neroli oil has a calming effect on the *Heart* and *Shen*, which are associated with the Fire Element. It essentially has a cooling and calming effect on excess Fire.²¹

Personality

The neroli personality is described as being one of the most spiritual personalities. Worwood states that whatever their age, there is a built-in wisdom that extends far beyond that of worldly knowledge. She describes neroli as a personality that seems to have found a way to be ageless, forever young in a spring-like way.²⁴

They are always able to find happiness in everything. They acknowledge the imperfections in people, but always focus and look for the good in people. Neroli personality's good intentions mean that they can easily be taken advantage of by the people they love. Their friends and family get so used to being put first that they neglect their own needs.²⁴

Worwood explains that neroli personality types are happiest when they are searching the mysteries of life. They can become saddened by the lack of understanding in the world today and can become very sensitive souls. They have very high morals. They believe that no one has the right to dictate how one should think, feel or act.²⁴

According to Myers-Briggs personality types, the neroli personality as likely to be an ENFP. ENFPs are outgoing, lively and spontaneous. They are very enthusiastic and their joy for life can be contagious. They have a rich imagination and active mind. Their thoughts are always wandering and their mood constantly changing. They can be inspiring and charismatic leaders. They are always involved or in love, with someone or something new. They know how to establish instant rapport and make people feel comfortable. They love emotional intensity and enjoy expressing their feelings. They can be charming and flirtatious. They relate with warmth to many people and can appear overly enthusiastic, positive and optimistic.

Subtle

Neroli oil is associated with purity. It brings us in touch with our higher selves. It facilitates all spiritual work and is recommended for enhancing creativity.²⁵

Keim Loughran & Bull state that neroli is the essential oil that assists the subconscious mind to reveal itself and unite with the conscious mind, bringing awareness to the present moment and helping to resolve blocks. This releases a flood of positive energy that becomes available to the super-conscious. They state that as this energy flows from self to soul to spirit, we are in direct communication with the world of manifestation. Neroli helps us manifest our deepest and highest aspiration.²⁶

Worwood explains that neroli touches the realms of the angels and anyone who uses it is brushed with the light of angels' wings. She describes neroli as pure spirit, representing the purity in all things, always loving and peaceful. It also has another purpose – to bring self-recognition and relief.²⁷

Mojay describes neroli oil as both sensual and spiritual. It helps to reestablish the links between a disconnected body and mind.²¹

Blending

Aromatherapy

For the relief of symptoms associated with depression, consider blending neroli oil with essential oils such as bergamot, geranium, fragonia, lavender, jasmine absolute, rose otto, sweet orange, sandalwood or ylang ylang.

For the relief of anxiety, nervous tension and stress-related conditions, consider blending neroli oil with essential oils such as bergamot, clary sage, geranium, lavender, mandarin, sweet orange, petitgrain, rosemary or sandalwood.

To assist in the management of hypertension, consider blending neroli oil with essential oils such as lavender, may chang, sweet marjoram or ylang ylang.

For sensitive skin, consider blending neroli oil with essential oils such as German chamomile, everlasting, lavender or sandalwood.

Perfumery

Neroli is considered the perfect starting material for the classic eau de cologne style perfume. Arctander states that it blends well with all the citrus oils and numerous floral absolutes.²

How to use

Bath

Full body bath, foot bath

Topical

Compress, massage, ointment, skin care

Inhalation

Direct inhalation, diffuser, oil vaporiser

Safety

Neroli oil is non-toxic, non-irritating and non-sensitising.⁷ Lis-Balchin states that due to widespread adulteration there is a high sensitisation potential.⁴

find Neroli on
www.perfectpotion.com.au

References

1. Fischer-Rizzi S. *Complete aromatherapy handbook*. Sterling Publishing, New York, 1990.
2. Khan I, Abourashed E. *Leung's encyclopedia of common natural ingredients used in food, drugs and cosmetics*. 3rd edn. John Wiley & Sons, New Jersey, 2010.
3. Arctander S. *Perfume and flavour materials of natural origin*. Allured Publishing, Carol Stream, 1994.
4. Weiss EA. *Essential oil crops*. CAB International, Wallingford, 1997.
5. Lis-Balchin M. *Aromatherapy science – a guide for healthcare professionals*. Pharmaceutical Press, London, 2006.
6. Schmidt E, Wanner J. *Adulteration of essential oils*. In Baser KHC, Buchbauer G. eds. *Handbook of essential oils – science, technology and applications*. 2nd edn. CRC Press, Boca Raton, 2016: 707-745.
7. Lawless J. *The encyclopaedia of essential oils*. Element Books, Shaftesbury, 1992.
8. Azanchi T et al. *Anticonvulsant activity of Citrus aurantium blossom essential oil (neroli): involvement of the GABAergic system*. *Natural Product Communications*, 2014; 9(11): 1615-1618.
9. Trabelsi D et al. *Chemical composition and antifungal activity of essential oils from flowers, leaves and peels of Tunisian Citrus aurantium against Penicillium digitatum and Penicillium italicum*. *Journal of Essential Oil Bearing Plants*, 2016; 19(7): 1660-1674. doi: 10.1080/0972060X.2016.1141069
10. Haj Ammar A et al. *Chemical composition and in vitro antimicrobial and antioxidant activities of Citrus aurantium L. flowers essential oil (neroli oil)*. *Pakistan Journal of Biological Sciences*, 15(21): 1034-1040. doi: 10.3923/pjbs.2012.1034.1040
11. Cho MY et al. *Effects of aromatherapy on the anxiety, vital signs and sleep quality of percutaneous coronary intervention patients in intensive care units*. *Evidence-Based Complementary and Alternative Medicine*, 2013; 2013: 381381. doi: 10.1155/2013/381381. Cited in Quintessential Aromatics database, 2013.
12. Namazi M et al. *Aromatherapy with Citrus aurantium oil and anxiety during the first stage of labor*. *Iranian Red Crescent Medical Journal*, 2014; 16(6): e18371. doi: 0.5812/ircmj.18371. Cited in Quintessential Aromatics database, 2013.
13. Chen YJ et al. *Inhalation of neroli essential oil and its anxiolytic effects*. *Journal of Complementary and Integrative Medicine*, 2008; 5(1). doi: 10.2202/1553-3840.1143
14. Stevenson C. *Orange blossom evaluation*. *The International Journal of Aromatherapy*, 1992; 4(3): 22-24.
15. Kim IH et al. *Essential oil inhalation on blood pressure and salivary cortisol levels in prehypertensive and hypertensive subjects*. *Evidence-Based Complementary and Alternative Medicine*, 2012; 2012: 984203. doi: 10.1155/2012/984203
16. Choi SY et al. *Effects of inhalation of essential oil of Citrus aurantium L. var. amara on menopausal symptoms, stress, and estrogen in postmenopausal women: a randomized controlled trial*. *Evidence-Based Complementary and Alternative Medicine*, 2014; 2014: 796518. doi: 10.1155/2014/796518
17. Stevenson C. *The psychophysiological effects of aromatherapy massage following cardiac surgery*. *Complementary Therapies in Medicine*, 1994; 2(1): 27-35. Cited in Quintessential Aromatics database, 2013.
18. Campenni CE et al. *Role of suggestion in odor-induced mood change*. *Psychological Reports*, 2004; 94(3): 1127-1136. Cited in Quintessential Aromatics database, 2013.
19. Davis P. *Aromatherapy an A-Z*. 2nd edn. The C.W. Daniel Company, Saffron Walden, 1999.
20. Lavabre M. *Aromatherapy workbook*. Healing Arts Press, Rochester, 1997.
21. Mojay G. *Aromatherapy for healing the spirit*. Healing Arts Press, Rochester, 1999.
22. Holmes P. *Neroli – the lightness of being*. *The International Journal of Aromatherapy*, 1995; 7(2): 14-17.
23. Schnaubelt K. *Medical aromatherapy*. Frog, Berkeley, 1999.
24. Worwood VA. *The fragrant mind*. Transworld Publishers, London, 1995.
25. Davis P. *Subtle aromatherapy*. The C.W. Daniel Company, Saffron Walden, 1991.
26. Keim-Loughran J, Bull R. *Aromatherapy anointing oils*. Frog, Berkeley, 2001.
27. Worwood VA. *The fragrant heavens*. Transworld Publishers, London, 1999.