Bergamot

*Citrus aurantium* L. ssp. *bergamia* (Risso & Poit.) Wight & Arn. ex Engler

**BOTANY AND HISTORY INFORMATION**

**Botanical Family:** Rutaceae

**Botany:** A hybrid of bitter orange (*Citrus aurantium* L.) and lemon (*Citrus limon* L.), the tree grows to about 16 feet, with strong lush green leaves and star shaped white flowers. The fruit is round to pear shaped, ripens from green to yellow and is inedible. More fragile than orange or lemon trees, the bergamot tree has been cultivated in Italy for the past 600 years where it grows particularly well due to climate and soil in this area. The tree is mainly cultivated for its essential oil. It is harvested from November to February and 1500kg of zest is needed to produce a liter of essential oil (cold pressed bergamot is referred to as an essence). The pulp, which is considered to be too bitter for consumption, is used in making citric acid. A petitgrain is occasionally made from the leaves. Bergamot essential oil should not be confused with the herb Bergamot or Bee Balm (*Monardi didyma*).

**History and Myth:** It is said to have been bought from the Canary Islands to Calabria, Italy by Christopher Columbus. The essential oil has been used in Italian folklore medicine since 1725, primarily for fever and worms. Bergamot essential oil has been used for mouth, skin, respiratory and urinary tract infections, gonococcal infections, leucorrhrea, and vaginal pruritis. The peel is dried and used in cooking, as an additive in drinks and is also candied.
EXTRACTION INFORMATION

Country of Origin: Calabria, Southern Italy, Sicily
Part of Plant Used: Zest or peel of fruit
Oil Yield: 0.5%
Extraction Method: Expression from the fresh peel of the nearly ripe fruit

• Note: Although technically an essential oil, the cold pressed citrus oils are commonly referred to as essences (most companies use this as a way of differentiating between the steam distilled essential oil and the cold pressed essential oil.

Color of Oil: Emerald green - olive green
• The color of bergamot will change to a yellowish to clear color upon aging or exposure to light.

BLENDING INFORMATION

Odor Description: Rich, exotic, fresh, sweet, sharp, citrus becoming more spicy after a time.
Blending Factor: 7 to 8
Note: Top-strong
Blends well with: Clary sage, Geranium, Ylang ylang, Lavender, Angelica root, Jasmine, Cape chamomile, other Citrus sp., (e.g. Mandarin, Sweet orange, etc.) Roman chamomile, Lemongrass, Ylang ylang, Peppermint, Neroli, Ho wood, Neroli, Ginger

SAFETY INFORMATION

Unrectified Bergamot
• Contraindications (dermal): Avoid sunlight or sun bed if blend contains more than 0.4% unrectified bergamot. Phototoxic (moderate risk).
• Cautions: Old or oxidized oils should be avoided.
**To avoid phototoxicity with the unrectified essential oil, use in blend at 0.4% or below.

Rectified Bergamot (Bergamot FCC)
• Cautions: Old or oxidized oils should be avoided.

**Store all citrus oils in dark containers and keep cool. Refrigerating is a good idea.
**CHEMICAL COMPOSITION**

**Chemical Feature:** Rich in monoterpenes (limonene) and esters (linalyl acetate) supported by the sedative monoterpenol, linalol. The sesquiterpene ketone, nootkatone, is responsible for some of the characteristic aroma of citrus oils which contain it, e.g. lemon, lime, orange, tangerine and especially, grapefruit. Nootkatone is used extensively in the food, fragrance, cosmetics, and pharmaceutical industries.
<table>
<thead>
<tr>
<th>Chemical Family</th>
<th>Specific Components</th>
</tr>
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<tbody>
<tr>
<td><strong>Monoterpenes</strong></td>
<td>α-pinene (1.12%), α-thujene (0.29%), β-pinene (4.98%), α-terpinene (0.12%), limonene (46.85%), β-phellandrene (0.16%), (z)-β-ocimene (0.05%), gamma-terpinene (7.12%), (E)-β-ocimene (0.16%), terpinolene (0.29%), p-cymene (0.12%), β-myrcene (1.24%), sabinene (0.92%)</td>
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<td><strong>Sesquiterpenes</strong></td>
<td>β-caryophyllene (0.4%), (E)-β-farnesene (0.06%), α-humulene (0.04%), germacrene D (0.05%), β-bisabolene (0.52%)</td>
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<td><strong>Monoterpene Alcohols</strong></td>
<td>linalol (6.04%), nerol (0.05%)</td>
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<td><strong>Aldehydes</strong></td>
<td>octanal (0.03%), decanal (0.05%), neral (0.16%), geranal (0.31%)</td>
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<td><strong>Esters</strong></td>
<td>linalyl acetate (26.38%), neryl acetate (0.5%), geranyl acetate (0.44%), terpenyl acetate (0.17%), d’octyl acetate (0.1%)</td>
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<tr>
<td><strong>Ketones</strong></td>
<td>nootkatone (0.06%), e-solanone (0.08%)</td>
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<tr>
<td><strong>Oxide</strong></td>
<td>1.8 cineole (0.05%)</td>
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**THERAPEUTIC ACTIONS:**
Analgesic, antibacterial, antidepressant, antifungal/antimycotic, anti-inflammatory, airborne antiseptic, antispasmodic, antiviral, anxiolytic, aperitive, carminative, digestive, neuroprotective, nerve, sedative, uplifting
### French Aromatic Medicine: *Citrus bergamia*

<table>
<thead>
<tr>
<th>Properties</th>
<th>Main indications</th>
<th>Sample Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digestive/carminative/laxative</td>
<td>Colic and intestinal infections, constipation, difficult digestion, bloating</td>
<td>50% <em>Citrus bergamia</em> (or 25% <em>Citrus reticulata</em> and 25% <em>Citrus bergamia</em>) and 50% <em>Chamaemelum nobile</em> in vegetable oil. 2-4 drops of blend applied to solar plexus and/or massaged on abdomen.</td>
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<td>Antispasmodic</td>
<td>Menstrual cramps Colitis Emotional ‘spasms’</td>
<td>Massage oil utilizing sesame oil with 3-5% dilution of: Bergamot (<em>Citrus bergamia</em>), Marjoram (<em>Origanum marjorana</em>), and Roman chamomile (<em>Chamaemelum nobile</em>).</td>
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<td>Regenerating for the skin, regulates sebum secretion.</td>
<td>Eczema, psoriasis, depigmentation, oily skin</td>
<td><strong>Treatment for oily skin:</strong> 3 Tbsp of fine clay, 1 tsp of rosehip oil, 2 drops of <em>Lavandula angustifolia</em> and 2 drops of <em>Citrus bergamia</em> and the hydrosol - <em>Thymus vulgaris</em> ct. linalol to desired consistency.</td>
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<td>Sedative, calming, supports parasympathetic nervous system (rest and digest)</td>
<td>Depression, anxiety, stress, irritability, sleep problems in children.</td>
<td><strong>Sleeping problems:</strong> 1ml <em>Cananga odorata</em> extra, 1ml <em>Lavandula angustifolia</em>, 2ml <em>Citrus bergamia</em>, and 1ml <em>Citrus aurantium</em> var. <em>amara</em> (flos.) in 10ml of sweet almond oil or sesame oil. Apply 4-5 drops on the solar plexus or on the bottom of the feet 30 minutes before going to bed. Could also leave out vegetable oil and use in diffusor 30 minutes prior to going to sleep. *Use diffusor as instructed by individual diffusor type.</td>
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<td>Antidepressant</td>
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CORE THERAPEUTIC APPLICATIONS

Digestive system: stress-related digestive issues, lack of appetite, dyspepsia, regulates appetite, nausea, colic, intestinal infections, sluggish digestion, constipation.

Nervous system: insomnia (for both adults and children), nervous tension, depression, anxiety, reduces irritability, stress and stress-related conditions (supports parasympathetic nervous system).

Reproductive system: Emotional aspects of PMS, menopause (mood swings).

Skin: acne, weeping eczema, oily complexion, cold sores, oily hair/skin, vitiligo, psoriasis

**Safety note:** when utilizing bergamot for its therapeutic actions for the skin, be sure to blend under 0.4%. This will reduce the likelihood of photosensitization.

Psyche and Emotions: insomnia, emotional instability (mood swings), anxiety, depression particularly when anxiety is present. Bergamot is uplifting and calming depending on what you blend it with: Clary sage and Bergamot would tend to be calming whereas Bergamot with Eucalyptus would be more stimulating.

Ayurveda: Could be useful for excess vata that may result in conditions presenting excitability, irritability, pain, spasms, tremors and seizures. Can soothe excess pitta anger.

Research Notes:

• **Bergamot (Citrus bergamia) has anti-inflammatory effect.** Anti-inflammatory activity of Bergamot essential oil could be due to one or several of these components: linalol, linalyl acetate, limonene, and alpha-pinene which have been shown to have strong anti-inflammatory activity.4

• **Bergamot (Citrus bergamia) has anxiolytic activity.**5

• **Bergamot (Citrus bergamia) has neuroprotective activity.**
  Our data demonstrate that BEO reduces neuronal damage caused in vitro by excitotoxic stimuli and that this neuroprotection was associated with prevention of injury-induced engagement of critical death pathways.6

• **Bergamot (Citrus bergamia) exhibits anxiolytic-like effect and reduces stress response.**
  In conclusion, both BEO and diazepam exhibited anxiolytic-like behaviours and attenuated HPA axis activity by reducing the corticosterone response to stress.7

• **Bergamot (Citrus bergamia) exhibits antifungal (antimycotic) activity.**
  This study demonstrated the high in vitro activity of bergamot oil against a wide number of clinical isolates of various pathogenic dermatophytes (Trichophyton, Microsporum and Epidermophyton). These results give substantial support to popular or anecdotal beliefs in the effectiveness of treating skin and mucosal infections with bergamot oils.8
• Bergamot (*Citrus bergamia*) exhibits antinociceptive activity.\(^9\)

• Bergamot essential oil (BEO) possesses anxiolytic and neuroprotective activity and attenuates HPA axis activity by reducing the corticosterone response to stress.\(^{10}\)

APPLICATION NOTE

Bergamot is phototoxic and this is important to remember when using this oil, unless of course, you are using the bergaptene-free essential oil. Bergamot has a strong affinity to the nervous system/emotions and is utilized primarily for diffusion, inhalers, and cutaneous applications. Rarely used or recommended for internal application.
References


