Expert Herbal Reality Resource
Mint

Names

Botanical Name *Mentha x piperita, Mentha arvensis,* and other species

Family: Labiatae

Common names: peppermint, horsemint (Eng), Pfefferminze, Pfefferminzblätter, Katzenkraut, Edelminze, Englische Minze (Ger), menthe anglaise, menthe poivrée, feuilles de menthe (Fr), menta prima, menta piemonte, menta peperina (Ital), hierbabuena (Sp), pudina, puthia (Hindi), paparaminta (Sanskrit), bo he, pak hom ho, bok hoh, heung-fa-chio, xiang hua cai, po ho (Chin)

Alternate botanical names: *Mentha piperata var vulgaris Sole,* (black peppermint) *M. piperata var officinalis Sole* (white peppermint), *Mentha spicata* (spearmint), *Mentha aquatica* (water mint)

Description

Mints are perennial herbs distinguished easily by the fresh minty scent and taste of their leaves. All mints have creeping rhizomes, from which new shoots grow up to 50-60cm in height. (If you are growing mints you should use a container or bucket to prevent them encroaching on other plants.) Mint leaves are finely serrated, and like other labiates the stems of the plant are square. The flowers of mint plants are often a pale purple and will form tight whorls around the stem. Several members of the mint family were introduced to Britain by the Romans and have become naturalised throughout Europe, often found growing in the wild close to water or waste ground.

Many familiar mints are actually botanical hybrids. Peppermint (*Mentha x piperita*) is a hybrid of *M. spicata* (spearmint) – itself a hybrid of *M. longifolia* and *M. suaveolens* - and *M. aquatica* (water mint). The two most common cultivated varieties of peppermint are *M. piperita var. vulgaris* Sole ('black mint') and *M. piperita var. officinalis* Sole ('white mint'). Black mint has darker purplish stems and purple-tinged leaves.

Constituents

- **Essential oil** (0.5–4%), consisting predominantly of menthol (35–45%) and (–)-menthone (10–30%)
- **Tannins** (6–12%)
- **Flavonoids -** primarily eriocitrin, luteolin and hesperidin
- **Triterpenes**
- **Bitter substances**.

The most obvious constituent of mints is menthol, responsible for the majority of their therapeutic actions, although the flavonoid and tannin components are also significant. For example the tannins may add to the calming effect of mints in diarrhoea or other irritation of the bowel.

Traditional use

Mints have been traditionally used in the relief of digestive disorders, and to balance the effects of stronger remedies, especially stimulating laxatives. Their beneficial actions on the digestive system extend to the use of the tea for

nausea, as well as morning and travel sickness. Members of the mint family are also widely used as diaphoretics (to stimulate perspiration in fevers and so help keep high temperatures in check – one reason why they are universally seen as 'cooling'). With a key constituent menthol, mints not surprisingly have also been widely used for respiratory symptoms, to clear nasal passages, to relieve coughing in bronchial conditions and pneumonia, and for the temporary relief of sore throats. They have also seen to promote digestive, kidney and liver detox functions. Women have used mint teas to relieve painful periods. Externally, peppermint oil has been used to relieve pain and itching, and as a mouthwash. Bruised fresh mint and peppermint oil have a use in relieving headaches. They have a reputation as mildly sedative, and were used in combination with other herbs to relieve nervous upsets. They also have a long history as flavouring agents for teas, medicines, food and drink.

Traditional actions

The mints above all in tradition are seen as on the one hand warming (in the case of colds and fevers), and the most accessible cooling remedies. This latter applied to their use for a full range of 'hot' conditions, reducing the intensity of fevers for example, and particularly to calm hot, agitated and inflamed conditions of the digestion and airways.

In Ayurvedic medicine of India the mints have the following characteristics that reflect this bidirectional reputation.

Rasa (taste) Sweet, pungent.
Virya (action) Cooling and heating.
Vipaka (post-digestive effect) Pungent.
Guna (quality) Light, dry, penetrating.
Dosha effect: reduces *pitta, kapha* and *vata,* in excess aggravates *vata*
Dhatu (tissue) Plasma, blood, nerve.
Srotas (channels) Digestive, circulatory, respiratory, nervous.

What practitioners say

The most useful role of peppermint is as a tea in the treatment of various digestive upsets. Individuals with dyspeptic, flatulent or colicky symptoms divide approximately evenly between those who are relieved by peppermint and those who are not. It is a simple first step for anyone to find out in which category they fall: if there is any relief at all from taking a cup of simple tea then it is worth making it stronger, by steeping the teabag for 15 minutes and possibly using two per cup. If there is no relief it probably is worth trying a 'warming' remedy like fennel or ginger instead. If peppermint is helpful then chamomile may also work and more substantial benefits made be had with the stronger 'cooling' digestive remedies, the bitters (eg dandelion, artichoke, gentian root or wormwood). Practitioners may use the oil, particularly in enteric-coated capsules, for bowel irritability and as an ingredient of liniments or other topical applications. However there are gentler and as effective oils for inhalation purposes (such as oils of pine and aniseed).

Digestion: Indicated in heartburn, nervous digestion, flatulence, bloating, IBS, ulcers, nausea and anorexia. The tea (though probably not the oil) can relieve gastritis and enteritis. The aromatic essential oils can help to alleviate morning sickness, vomiting and spasms in the gastrointestinal tract. The oil may relive gallbladder pain,

though should be used with caution with gallstones themselves.

Infections: Commonly used as a hot tea to influence diaphoresis (sweating) in colds and flu. Especially when also inhaled it can help unblock airways congestion and is indicated where the lungs are congested with catarrh and constricted by spasms, wheezing or asthma.

Mental health: Mint teas may relieve mental and emotional tension and especially cardiac effects of anxiety.

Women's health: Indicated in menstrual congestion, pain and amenorrhoea due to its ability to reduce congestion in the body. There is some evidence to point to the use of the tea in PCOS and other hormonal problems.

Topical: Peppermint oil when applied to the skin can cool and soothe skin inflammation, hot flushes and allergic itching. It is a prime remedy to relive headaches and 'hot' neuralgic pain. It should be considered for cracked nipples in breastfeeding mothers.

Evidence

The vast majority of modern research literature for mints relates to peppermint oil. As a strong extract of the menthol-containing mint family this supports all their traditional reputations to some extent.[i] Peppermint oil exerts a significant antispasmodic, carminative effect on the gastrointestinal tract, with a range of evidence pointing to the relief of dyspepsia,[ii] stomach spasm[iii] and nausea.[iv] There seems also to be an improvement in stomach performance generally.[v] There is evidence that peppermint oil can reduce bloating, flatulent and colicky symptoms of irritable bowel syndrome (IBS)[vi,vii], with plausible mechanisms of action as an antispasmodic.[viii,ix] This benefit extends to children,[x] and more widely in helping children suffering from undifferentiated functional abdominal pain.[xi] Inhaling peppermint oil is sufficient to reduce nausea and vomiting.[xii]

Mints are demonstrably cooling.[xiii,xiv] Their constituent menthol has this effect by acting on transient receptor potential (TRP) channels in sensory nerves, effectively stimulating 'cold receptors' in the stomach.[xv] The consequent cooling is systemic as well as local: for example, peppermint oil not only reduces heartburn faster,[xvi] but also reduces heart rate and other cardiac consequences of anxiety.[xvii] The cooling effect may in part explain the symptomatic relief of nasal congestion.[xviii]

Topically, peppermint oil is analgesic (pain relieving),[xix] and has been shown to be useful in the treatment of neuralgia and pruritis e.g. in shingles, as well as in the relief of headaches.[xx] As a healing agent peppermint gel was shown to be a superior treatment for cracked nipples in breastfeeding mothers.[xxi]

Inhaling peppermint oil was found to enhance memory and to increase alertness in healthy volunteers,[xxii,xxiii] and may also improve sleep quality.[xxiv]

In a notable exception to the peppermint oil dominance of the research literature spearmint leaf tea was found to decrease free testosterone and increase luteinizing hormone (LH), follicle-stimulating hormone (FSH) and oestradiol levels in mildly hirsute women, some with polycystic ovary syndrome (PCOS).[xxv]

Safety

Mints are very well tolerated, and adverse effects are mostly associated with peppermint oil, and may include contact dermatitis in some.[xxvi] However even here, a major review of the toxicity of peppermint oil as a cosmetic concluded that apart from sensitivity reactions the product was essentially safe, as long as pulegone content is kept below 1%.[xxvii]

Sensitivity reactions rarely occur in the mouth and airways: young children are more susceptible than adults. The oil should generally not be used as a topical application or neat inhalation in infants. Perianal burning occasionally occurs following ingestion of peppermint oil capsules – this may be due to rapid bowel transit time, and may be avoided with adjustment of dosage.

The tannin-content may be associated with gastrointestinal irritation in some individuals. One clinical trial suggests that, due to its tannin content, peppermint inhibited iron absorption by 84%. People with anaemia should be advised not to take peppermint simultaneously with meals or iron supplementation. Studies from Nigeria where glucose-6-phosphate deficiency is relatively common have associated menthol-containing skin applications with jaundice in infants with this deficiency.

There is no evidence of harmful effects from use in pregnant women although such evidence is limited. Mint is probably compatible with breastfeeding.

Dosage

Internally: 6-9g of dried leaf; 0.15-0.4ml (~3-8 drops) essential oil. Externally: 10% solution of peppermint oil applied to intact skin

References

i McKay DL, Blumberg JB. (2006) A review of the bioactivity and potential health benefits of peppermint tea (Mentha piperita L.). *Phytother Res*. 2006;20(8): 619–633.

ii Thompson Coon J, Ernst E. (2002) Systematic review: herbal medicinal products for non-ulcer dyspepsia. *Aliment Pharmacol Ther*. 16(10): 1689–1699.

iii Hiki N, Kurosaka H, Tatsutomi Y, et al. (2003) Peppermint oil reduces gastric spasm during upper endoscopy: a randomized, double-blind, double-dummy controlled trial. *Gastrointest Endosc*. 57(4):475–482

iv Tate S. (1997) Peppermint oil: a treatment for postoperative nausea. *J Adv Nurs*. 26(3): 543–549.

v Inamori M, Akiyama T, Akimoto K, et al. (2007) Early effects of peppermint oil on gastric emptying: a crossover study using a continuous real-time 13C breath test (BreathID system). *J Gastroenterol*. 42(7): 539–542

vi Khanna R, MacDonald JK, Levesque BG. (2014) Peppermint oil for the treatment of irritable bowel syndrome: a systematic review and meta-analysis. *J Clin Gastroenterol*. 48(6): 505–512.

vii Grigoleit HG, Grigoleit P. (2005) Peppermint oil in irritable bowel syndrome. *Phytomedicine*. 12(8): 601–606

viii Kligler B, Chaudhary S. (2007) Peppermint oil. *Am Fam Physician*. 2007;75(7):1027–1030

ix Grigoleit HG, Grigoleit P. (2005) Pharmacology and preclinical pharmacokinetics of peppermint oil. *Phytomedicine*. 12(8): 612–616.

x Kline RM, Kline JJ, Di Palma J, Barbero GJ. (2001) Enteric-coated, pH-dependent peppermint oil capsules for the treatment of irritable bowel syndrome in children. *J Pediatr*. 138(1):125–128

xi Anheyer D, Frawley J, Koch AK, et al. (2017) Herbal Medicines for Gastrointestinal Disorders in Children and Adolescents: A Systematic Review. *Pediatrics* 139(6): e20170062

xii Sites DS, Johnson NT, Miller JA, et al. (2014) Controlled breathing with or without peppermint aromatherapy for postoperative nausea and/or vomiting symptom relief: a randomized controlled trial. *J Perianesth Nurs*. 29(1): 12–19

xiii Knowlton WM, McKemy DD. (2011) TRPM8: from cold to cancer, peppermint to pain. *Curr Pharm Biotechnol*. 12(1): 68–77

[xiv] Jordt SE, McKemy DD, Julius D. (2003) Lessons from peppers and peppermint: the molecular logic of thermosensation. *Curr Opin Neurobiol*. 13(4): 487–492

[xv] Farco JA, Grundmann O. (2013) Menthol--pharmacology of an important naturally medicinal "cool". *Mini Rev Med Chem*. 13(1): 124–131

[xvi] Strugala V, Dettmar PW, Sarratt K, et al. (2010) A Randomized, controlled, crossover trial to investigate times to onset of the perception of soothing and cooling by over-the-counter heartburn treatments. *J Int Med Res*. 38(2): 449–457

[xvii] Kazadi LC, Fletcher J, Barrow PA. (2018) Gastric cooling and menthol cause an increase in cardiac parasympathetic efferent activity in healthy adult human volunteers. *Exp Physiol*. 103(10): 1302–1308

[xviii] Eccles R, Griffiths DH, Newton CG, Tolley NS. (1988) The effects of menthol isomers on nasal sensation of airflow. *Clin Otolaryngol Allied Sci*. 13(1): 25–29

[xix] Göbel H, Heinze A, Heinze-Kuhn K, et al. (2016) Oleum menthae piperitae (Pfefferminzöl) in der Akuttherapie des Kopfschmerzes vom Spannungstyp [Peppermint oil in the acute treatment of tension-type headache]. *Schmerz*. 30(3): 295–310

[xx] Borhani Haghighi A, Motazedian S, Rezaii R, et al. (2010) Cutaneous application of menthol 10% solution as an abortive treatment of migraine without aura: a randomised, double-blind, placebo-controlled, crossed-over study. *Int J Clin Pract*. 64(4): 451–456

[xxi] Melli MS, Rashidi MR, Nokhoodchi A, et al. (2007) A randomized trial of peppermint gel, lanolin ointment, and placebo gel to prevent nipple crack in primiparous breastfeeding women. *Med Sci Monit*. 13(9): CR406–CR411

[xxii] Kennedy D, Okello E, Chazot P, et al. (2018) Volatile Terpenes and Brain Function: Investigation of the Cognitive and Mood Effects of Mentha × Piperita L. Essential Oil with In Vitro Properties Relevant to Central Nervous System Function. *Nutrients*. 10(8): 1029

[xxiii] Moss M, Hewitt S, Moss L, Wesnes K. (2008) Modulation of cognitive performance and mood by aromas of peppermint and ylang-ylang. *Int J Neurosci*. 118(1): 59–77

[xxiv] Goel N, Lao RP. (2006) Sleep changes vary by odor perception in young adults. *Biol Psychol*. 71(3): 341–349

[xxv] Akdoğan M, Tamer MN, Cüre E, et al (2007). Effect of spearmint (Mentha spicata Labiatae) teas on androgen levels in women with hirsutism. *Phytother Res*. 21(5): 444–447

[xxvi] Jack AR, Norris PL, Storrs FJ. (2013) Allergic contact dermatitis to plant extracts in cosmetics. *Semin Cutan Med Surg*. 32(3): 140–146

[xxvii] Nair B. (2001) Final report on the safety assessment of Mentha Piperita (Peppermint) Oil, Mentha Piperita (Peppermint) Leaf Extract, Mentha Piperita (Peppermint) Leaf, and Mentha Piperita (Peppermint) Leaf Water. *Int J Toxicol*. 20 Suppl 3: 61–73