



## Chamomile (*Matricaria recutita*) As a Valuable Medicinal Plant

Jalal Bayati Zadeh<sup>1</sup> and Nasroallah Moradi Kor<sup>\*2</sup>, Zahra Moradi Kor<sup>3</sup>

<sup>1</sup>Department of Animal Science, Shahid Bahonar University, Kerman, Iran

<sup>2</sup>Young Researchers and Elite Club, Kerman Branch, Islamic Azad University, Kerman, Iran

<sup>3</sup>Young Researchers and Elite Club, Sirjan Branch, Islamic Azad University, Sirjan, Iran

### ABSTRACT

Chamomile is a widely recognized herb in Western culture. Its medicinal usage dates back to antiquity where such notables as Hippocrates, Galen, and Asclepius made written reference to it. As part of any medication history, pediatricians always should ask a child's caregiver about the child's use of over-the-counter remedies and herbal products. Chamomile is used widely to treat children who have GI disorders such as colic, dyspepsia, and diarrhea and to treat skin conditions such as dermatitis. Clinical studies have demonstrated that chamomile may have a positive effect in the treatment of atopic dermatitis, colic, and diarrhea. There are few adverse effects in children. However, children who are allergic to ragweed, asters, and chrysanthemums should use chamomile with caution.

**Key words:** Chamomile (*Matricaria recutita*), Medicinal plant, Pharmaceutical effect

### Description

Chamomile is a widely recognized herb in Western culture. Its medicinal usage dates back to antiquity where such notables as Hippocrates, Galen, and Asclepius made written reference to it. A common ingredient today in herbal teas because of its calming, carminative, and spasmolytic properties, it is also a popular ingredient in topical health and beauty products for its soothing and anti-inflammatory effects on skin. Chamomile has a sweet, grassy, and lightly fruity aroma. Its flowers are daisy-like, with yellow centers (approximately 1-1.5 cm in diameter) and white petals (between 12-20 in number). It is from the plant's fresh and dried flower heads that infusions, liquid extracts, and essential oils are made. Two species of chamomile are generally used in traditional herbalism, *Matricaria chamomilla* (*Chamomilla recutita*; German chamomile; Hungarian chamomile) and *Chamaemelum nobile* (Roman chamomile). Both annual herbs belong to the Asteraceae/Compositae family and are similar in physical appearance, chemical properties, and general applications. German chamomile, however, is the more familiar and more commonly used of the two.

## History

The two species of Chamomile (Roman and German) have been used for medicinal purposes for more than a thousand years (Mahady et al., 2001). They were first brought to North America by the Spanish colonists, probably in the early 16<sup>th</sup> century. Both species are among the most widely used medicinal plants in the world. Both German and Roman Chamomile are traditionally employed by empirical herbalists in northern Mexico and the American southwest as a mild infusion (tea) to treat a variety of ailments, especially colic in small children (Davidow, 1999; González, 1998; Kay, 1996). In Mexican traditional medicine, Chamomile (presumably Roman chamomile) is also used to alleviate menstrual problems as well as to stimulate labor during parturition (Adame and Adame, 2000).

## Active Constituents

German chamomile flowers contain 0.24- to 2.0-percent volatile oil that is blue in color. The two key constituents, (-)-alpha-bisabolol and chamazulene, account for 50-65 percent of total volatile oil content. Other components of the oil include (-)-alpha-bisabolol oxide A and B, (-)-alpha-bisabolone oxide A, spiroethers (cis- and trans- enyndicycloether), sesquiterpenes (antheotulid), cadinene, farnesene, furfural, spathulenol, and proazulene (matricarin and matricin). Chamazulene is formed from matricin during steam distillation of the oil. Yield varies depending on the origin and age of the flowers. European Pharmacopoeia recommends chamomile contain no less than 4 mL/kg of blue essential oil. Chamomile also contains up to eight-percent flavone glycosides (apigenin 7-glycoside and its 6'-acetylated derivative) and flavonols (luteolin glucosides, quercetin glycosides, and isohamnetin); up to 10-percent mucilage polysaccharides; up to 0.3-percent choline; and approximately 0.1-percent coumarins (umbelliferone and its methyl ether, herniarin). The tannin level in chamomile is less than one percent.

## Chamomile, German

### *Matricaria recutita*

Other Names:	Hungarian chamomile, Mayweed, Sweet false chamomile, True chamomiles
Description:	A feathery-leaved pineapple-scented garden plant in the aster family with small daisy-like yellow and white flowers.
Part Used:	Flowers
Action:	Calmative, Antispasmodic
Category:	Specific
Systems:	Nervous, Digestive
Taste:	Aromatic
Energy:	Warm
Primary Uses:	Colitis, Croup, Diverticulitis, Dyspepsia, Indigestion, Insomnia, Knotted Intestine, Nettle Sting, Seasickness, Stomach Weakness, Teething, Vomiting
Caution:	None noted
Preparation:	Infusion; Tincture
Dose:	1-2 cups 2-3 x daily; 15-30 drops 2-3 x daily
Products:	Teabag, Tincture, Bulk Herb, Powder, Ointment, Homeopathic tablet



### Health Benefits:

Chamomile tea is commonly used in many parts of Europe, South America, and Mexico for children with colic and other digestive disturbances, fever, insomnia, and the restlessness and irritability commonly associated with teething. Women have long used chamomile for PMS and menstrual cramps. It has also been recommended as a nervine, for muscle cramps, headaches, and to soothe indigestion and flatulent colic. Steam from the herb can be inhaled for respiratory tract irritation. Chamomile creams and ointments are applied to the skin to help soothe and heal burns and other skin irritations, wounds, diaper rash, and sore nipples. The homeopathic tablets are given to babies for teething and fussiness.

### Insomnia

#### Recommended Herbs:

Hops	Tincture	1/2 to 4 droppersful 2-3 x daily
Jamaica Dogwood	Tincture	20 drops to 2 droppersful
Valerian	Tincture	30-40 drops as needed
Wild Lettuce	Tincture	1-2 droppersful as needed
Skullcap	Tincture	10-30 drops as needed
Hops	Infusion: 6-8 grams	1 cup 2-3 x daily
Linden	Infusion: 1-4 grams	1 cup 2-3 x daily
Relaxing Formula	Tincture	1-4 droppersful as needed

#### Holistic Program:

Insomnia is the inability to have a restful, refreshing night's sleep. It can be of at least two types:

1. One has trouble falling asleep. This is often caused by tension, overwork and mental strain, especially late at night. Relaxing herbs are helpful here (catnip, valerian, passionflower, chamomile, linden flower). Avoid working late, stretch before bedtime, practice meditation and deep breathing, especially at night, and receive frequent massage or acupuncture treatments.

2. One falls asleep, but then wakes up after a few hours and finds it difficult to go back to sleep. This is often associated with a kidney or heart "yin," deficiency, or adrenal weakness. Consistent use of adrenal tonic herbs (eleuthero, rehmannia, reishi) in extract form is essential.

Either type of insomnia can be based on, or at least aggravated by a neurotransmitter imbalance. Herbs and foods that help restore the proper serotonin levels in the brain (L-tryptophan-rich yogurt, St. John's wort) can be useful.

## Nervousness

### Recommended Herbs:

Linden Infusion:	1-4 grams	1 cup 2-3 x daily
California Poppy	Tincture	2-4 droppersful as needed
Passionflower	Tincture	30 drops 3-4 x daily
Valerian	Tincture	30-40 drops 2-3 x daily
Hops	Infusion: 6-8 grams	1 cup 2-3 x daily
Reishi	Standardized Extract	2-4 capsules 2-3 x daily

### Medical Description:

Less intense than anxiety, but a feeling of restlessness, often with an inability to concentrate or sleep soundly. Can be brought on by caffeinated drinks like cola, tea, or coffee; stress; or mental and emotional disturbances.

### Holistic Program:

The regular practice of deep breathing is extremely effective for calming mind and body for it activates the parasympathetic branch of the autonomic nervous system with a corresponding reduction in sympathetic tone (flight or fight syndrome). Stretching, exercise, meditation, and working on clarity within oneself and one's relationships can all help. Calmative herbs (California poppy, kava, passionflower, hops, valerian, linden flowers) can be quite helpful.

## Sciatica, acute

### Recommended Herbs:

Wintergreen	Essential Oil	2-3 drops to affected area 2-3 x daily
Jamaica Dogwood	Tincture	20 drops to 2 droppersful 2 x daily
St. John's Wort	Oil	Apply to affected area as needed
St. John's Wort	Tincture	1-2 droppersful 2-3 x daily
Chamomile, Roman	Essential Oil	Apply 2-3 drops to affected area
Chamomile, Roman	Tincture	1-2 droppersful 2-3 x daily

### Medical Description:

Sciatica is a pain that is felt along the course of the sciatic nerve—the major leg nerve that travels from the lower lumbar spine down the back of the thigh and to the foot. The pain can be caused by a

compression of the nerve root in the lumbar region due to a lower back injury, often involving the partial collapse of or leakage from the shock-absorbing disks between the vertebrae.

### **Holistic Program:**

Exercise, physical therapy, hydrotherapy, stretching, and a natural foods diet can speed recovery. Experience shows that surgery or other heroic interventions of modern medicine are often not warranted and can lead to future chronic problems. Herbs helpful in reducing pain and swelling include pain-relieving herbs (California poppy, willow bark, valerian, Roman chamomile), antiinflammatories internally (St. John's wort, bromelain, vitamin C, bioflavonoids) and externally (St. John's wort, arnica, horse chestnut), and herbs to speed healing (eleuthero, plantain).

Adjunct Therapy: Hydrotherapy, ginger compresses.

### **Safety**

#### **Adverse Events**

A few case reports have documented atopic and contact dermatitis with the use of chamomile. Some individuals allergic to other members of the aster family (ragweed, asters, chrysanthemums) are allergic to chamomile. There are case reports of chamomile eyewashes causing allergic conjunctivitis. There have been rare cases of anaphylaxis to chamomile. No long-term problems have been identified from taking chamomile.

#### **Drug Interactions**

Three cases of chamomile interacting with cyclosporine in patients who have had renal transplants have been reported. The mechanism is inhibition of the activity of P450 CYP1A2 and 3A4. Potential interactions with warfarin have been reported, theoretically through the same mechanism of inhibition of P450. There is a theoretical additive effect with other sedative and anxiolytic medications.

#### **Use in Pregnancy and Lactation**

No studies have reported the safety of using chamomile for women who are pregnant or breastfeeding, although chamomile is widely consumed during pregnancy as a beverage to treat morning sickness.

#### **Pharmacologic Action**

A total of 120 chemical constituents have been identified in chamomile, including terpenoids (chamazulene), flavonoids (apigenin and luteolin), and coumarins (umbelliferone, alpha-bisabolol). The flavonoids apigenin and luteolin possess anti-inflammatory, carminative, and antispasmodic properties. The antiinflammatory, wound-healing, and antimicrobial effects of German chamomile are attributed to a blue essential oil that contains sesquiterpene alcohol, alpha-bisabolol, chamazulene, and flavonoids.

### **REFERENCES**

Adame J, Adame H. *Plantas Curativas del Noreste Mexicano*. Monterrey, Mexico: Ediciones Castillo; 2000.

Aertgeerts P, Albring M, Klaschka F, Nasemann T et al. Comparative testing of Kamillosan cream and steroidal (0.25% hydrocortisone, 0.75% fluocortin butyl ester) and non-steroidal (5% bufexamac) dermatologic agents in maintenance therapy of eczematous diseases *Z Hautkr.* 1985; 60(3):270-277.

Aggag ME, Yousef RT. Study of antimicrobial activity of chamomile oil. *Planta Med.* 1972;22:140–144.

Avallone R, Zanolì P, Puia G. et al. Pharmacological profile of apigenin, a flavonoid isolated from *Matricaria chamomilla*. *Biochem Pharmacol.* 2000; 59(11):1387-1394.

Budzinski JW, Foster BC, Vandenhoeck S, Arnason JT. An in vitro evaluation of human cytochrome P450 3A4 inhibition by selected commercial herbal extracts and tinctures. *Phytomedicine.* 2000;7:273–282.

Cinco M, Banfi E, Tubaro A., et al. A microbiological survey on the activity of a hydroalcoholic extract of camomile. *Int J Drug Res* 1983;21:145-151.

Forster DA, Denning A, Wills G, Bolger M, McCarthy E. Herbal medicine use during pregnancy in a group of Australian women. *BMC Pregnancy Childbirth.* 2006;6:21.

Hausen BM. A 6-year experience with compositae mix. *Am J Contact Dermat.* 1996;7:94–99.

Heck AM, DeWitt BA, Lukes AL. Potential interactions between alternative therapies and warfarin. *Am J Health Syst Pharm.* 2000;57:1221–1227.

Liu ZH, Nakano H. Antibacterial activity of spice extracts against food-related bacteria. *Journal of the Faculty of Applied Biological Science, Hiroshima University.* 1996;35:181–190.

Mahady GB, Fong HH, Farnsworth N. *Flos chamomillae.* WHO Monographs on Selected Medicinal Plants. Geneva, Switzerland: World Health Organization Publications; 1999.

Maliakal PP, Wanwimolruk S. Effect of herbal teas on hepatic drug metabolizing enzymes in rats. *J Pharm Pharmacol.* 2001;53: 1323–1329.

McKenna D. *Botanical Medicines. The Desk Reference of Major Herbal Supplements.* New York, NY: The Haworth Herbal Press 2002.

Nordeng H, Havnen GC. Use of herbal drugs in pregnancy: a survey among 400 Norwegian women. *Pharmacoepidemiol Drug Saf.* 2004;13:371–380.

Nowack R, Nowak B. Herbal teas interfere with cyclosporine levels in renal transplant patients. *Nephrol Dial Transplant.* 2005; 20:2554–2556.

Paladini A Marder M, Viola H, Wolfman C, Wasowski C, Medina JH. Flavonoids and the central nervous system: from forgotten factors to potent anxiolytic compounds. *J Pharm Pharmacol* 51 (5): 519-526; 1999.

Patzelt-Wenzler R, Ponce-Poschl E. Proof of efficacy of Kamillosan cream in atopic eczema. *Eur J Med Res* 5 (4): 171-175, 2000.

Paulsen E. Contact sensitization from Compositae-containing herbal remedies and cosmetics. *Contact Dermatitis*. 2002;47(4):189-198.

Reider N, Sepp N, Fritsch P, Weinlich G, Jensen-Jarolim E. Anaphylaxis to camomile: clinical features and allergen crossreactivity. *Clin Exp Allergy*. 2000;30:1436–1443.

Salamon I. Chamomile, a medicinal plant. *The Herb, Spice, and Medicinal Plant Digest*. 1992;10:1–4.

Segal R, Pilote L. Warfarin interaction with *Matricaria chamomilla*. *CMAJ*. 2006;174:1281–1282.

Soliman KM, Badeaa RI. Effect of oil extracted from some medicinal plants on different mycotoxigenic fungi. *Food Chem Toxicol*. 2002;40:1669–1675.