

The Longwood Herbal Task Force
(<http://www.mcp.edu/herbal/default.htm>) and
The Center for Holistic Pediatric Education and Research
(<http://www.childrenshospital.org/holistic/>)

Calendula (Calendula officinalis)

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Principal Proposed Uses: Emollient, vulnerary, anti-inflammatory

Other Proposed Uses: Uterine tonic, antimicrobial, cancer remedy

Overview

Despite the lack of scientifically controlled trials evaluating the effectiveness of calendula, topically applied products containing its extracts are commonly available over the counter. Data are insufficient to recommend calendula for internal use as a uterine tonic, antimicrobial or cancer remedy. Topical preparations appear to be safe for those who are not allergic to calendula. Calendula products should not be used in the eye due to potential contamination and misapplication. Data are insufficient regarding calendula's safety during pregnancy, lactation or childhood or by persons taking sedative medications.

History and Popular Uses

Cultivated by the Egyptians, Greeks, Hindus and Arabs, calendula grew in European gardens and has been used medicinally since the 12th century. Its name comes from the Latin word, *calends*, the first day of every month, because of its long flowering period. Because the flowers follow the sun, it was linked to the astrological sign of summer, Leo, and to treating the heart and conditions caused by heat. Calendula was taken internally to treat fevers, promote menstruation and treat cancer¹. Most importantly, the flowers were made into extracts, tinctures, balms and salves and applied directly to the skin to help heal wounds and to soothe inflamed and damaged skin.

In Italian folk medicine calendula is used as an antipyretic and anti-inflammatory. Teas made from calendula are used as eye washes, gargles or compresses to treat conjunctivitis, pharyngitis, aphthous stomatitis and gingivostomatitis, diaper rashes and other inflammatory conditions of the skin and mucus membranes²⁻⁴. In India, herbal compounds including calendula are used topically to treat hemorrhoids⁵. Calendula cream alone or in combination with other remedies (Traumeel[®]) is also a favorite homeopathic remedy to treat abrasions and minor burns.

Dried calendula petals are used in the spice trade as an inexpensive alternative to saffron and are used in many ointments to enhance their appearance by adding a gold color. Like other members of the daisy family, the dried flowers have also been used as an insect repellent. Some herbalists combine calendula, comfrey, echinacea and St. John's wort in a cream or ointment as an all-purpose skin salve.

Botany

Medicinal species: Calendula officinalis. There are about 20 species in this genus. The flowers of both *C. officinalis* and *C. arvensis* are used medicinally.

Common names: Calendula, field marigold, garden marigold, goldbloom, holligold, maravilla, marybud, marygold, pot marigold, Ringelblumen(Ger). In old English calendula was known as “golds”, and was associated first with the Virgin Mary and then with Queen Mary; hence “Mary's gold.”

Botanical family: Compositae/Asteracea (daisy)

Plant description: Calendula is a self-seeding annual with bright yellow or gold flowers that bloom from May until October; it grows to about two feet tall with multiple branches. The flowers are the part used medicinally⁶.

Where it's grown: Native to central Europe and the Mediterranean, it grows readily in sunny locations throughout North America and Europe.

Biochemistry

Calendula: Potentially Active Chemical Constituents

- Sesquiterpene and flavonol glycosides⁷⁻⁹
- Triterpenoid saponins
- Triterpene alcohols
- Flavonoids, carotenoids, & xanthophylls
- Phenolic acids
- Other: sterols, mucilage, tocopherols, calendulin, bitters

The *triterpene alcohols* from calendula and other members of the daisy family have shown anti-inflammatory activity in the experimental mouse model¹⁰. The amounts of active constituents vary with the plant's maturity and the time of harvesting¹¹⁻¹³.

Experimental Studies

Calendula: Potential Clinical Benefits

1. Cardiovascular: none
2. Pulmonary: none
3. Renal and electrolyte balance: none
4. Gastrointestinal/hepatic: Chronic colitis and ulcers
5. Neuro-psychiatric: Sedative
6. Endocrine: none
7. Hematologic: none
8. Rheumatologic: none
9. Reproductive: Estrogenic and uterotonic effects
10. Immune modulation: Immunostimulant, anti-inflammatory
11. Antimicrobial: Antiviral, antibacterial, antifungal
12. Antineoplastic: none
13. Antioxidant: none
14. Skin and mucus membranes: Vulnerary
15. Other/miscellaneous: none

1. **Cardiovascular:** none
2. **Pulmonary:** none
3. **Renal and electrolyte balance:** none
4. **Gastrointestinal/hepatic:** Chronic colitis and ulcers
 - i. *In vitro data:* none
 - ii. *Animal data:* none
 - iii. *Human data:* In a case series of 24 adults with non-specific colitis treated with an herbal tea that included calendula, 96% had improved symptoms within two weeks¹⁴. In another series of 170 patients with duodenal ulcers and/or gastroduodenitis, treatment with an herbal combination including calendula was followed by improved symptoms in 90%¹⁵. No controlled trials have been reported.

5. **Neuro-psychiatric:** Sedative

- i. *In vitro data:* none
- ii. *Animal data:* Several animal studies suggest that calendula extracts have mild sedative effects and synergistic effects with sedative medications such as barbiturates¹⁶⁻¹⁹.
- iii. *Human data:* none

6. **Endocrine:** none

7. **Hematologic:** none

8. **Rheumatologic:** none

9. **Reproductive:** Estrogenic and uterotonic effects

- i. *In vitro data:* Calendula extracts exhibited moderate uterotonic effects in isolated rabbit and guinea pig uterine horn tissues²⁰.
- ii. *Animal data:* Two Polish abstracts from the early 1960's reported that calendula extracts had some estrogenic activity in ovariectomized mice^{21, 22}.
- iii. *Human data:* none

10. **Immune modulation:** Immunostimulant, anti-inflammatory

a. Immunostimulant

- i. *In vitro data:* Calendula's polysaccharides may stimulate phagocytosis²³.
- ii. *Animal data:* none
- iii. *Human data:* none

b. Anti-inflammatory

- i. *In vitro data:* Calendula's glycosides inhibited lipoxygenase activity *in vitro*²⁴.
- ii. *Animal data:* In several studies, calendula's triterpenoids (especially the faradiol monoester) reduced experimentally induced inflammation in mice^{10, 25-27}. Rats with long-standing ocular inflammation improved when treated with calendula eyewashes; however, there was no comparison group in this study²⁸.
- iii. *Human data:* Anecdotal cases report decreased pain and inflammation in post-mastectomy patients²⁹ and in children with chronic suppurative otitis media³⁰. No controlled trials have been reported.

11. **Antimicrobial:** Antiviral, antibacterial, antifungal

a. Antiviral

- i. *In vitro data:* Data are conflicting. Calendula's *sesquiterpene glycosides* inhibited replication of rhinovirus and Herpes I virus^{31, 32}; calendula extracts also displayed some anti-HIV activity, including a dose-response effect against reverse transcriptase activity³³; another study demonstrated activity against Herpes simplex and influenza viruses³⁴. However, other studies showed no antiviral activity against polio, vaccinia, influenza or Herpes viruses³⁵.
- ii. *Animal data:* none
- iii. *Human data:* none

b. Antibacterial

- i. *In vitro data:* Data are conflicting. Some studies showed antibacterial effects against *B. subtilis*, *E. coli*, and *Staph aureus*^{36, 37}; the arvensosides B & D were somewhat active against *Trypanosoma brucei*³⁸. In other studies, calendula was inactive against *Aerobacter aerogenes*, *Bacillus subtilis*, *E. coli*, *Klebsiella pneumonia*, *Proteus morgani*, *Proteus vulgaris*, *Pseudomonas aeruginosa*, *Serratia marcescens*, *Strep faecalis*, *Staphylococcus aureus*^{36, 37, 39-41}.
- ii. *Animal data:* none
- iii. *Human data:* none

c. Antifungal

- i. *In vitro data:* Calendula was not active against *Candida albicans* in one study³⁹, but was in another³⁷.
- ii. *Animal data:* none
- iii. *Human data:* none

12. **Antineoplastic:** Antimutagenic

- i. *In vitro data:* Calendula's saponins were antimutagenic for benzo(a)pyrene with a dose-effect relationship *in vitro*⁴².
- ii. *Animal data:* Calendula's saponins displayed cytotoxic and antitumor activity against mouse Ehrlich carcinoma^{43, 44}.

iii. *Human data*: none

13. **Antioxidant**: none

14. **Skin and mucus membranes**: Vulnerary

- i. *In vitro data*: One study reported enhanced vascularization in tissue cultures treated with a freeze-dried aqueous extract of calendula⁴⁵.
- ii. *Animal data*: Among rats with surgical wounds, an ointment containing 5% of the flower extract of calendula plus allantoin significantly speeded healing⁴⁶. Unfortunately, because there was more than one active ingredient in the ointment, it's impossible to tell how much of the benefit was attributable to calendula. Other studies in rats showed improved wound healing with a 60% alcohol solution of calendula flowers⁴⁷.
- iii. *Human data*: There is a long tradition and numerous case reports of using calendula-based ointments for wound healing and hemorrhoids^{5, 28, 48, 49}. Among adults suffering from leprosy, an ointment containing 10% calendula extract appeared to help heal chronic skin sores and prevent additional infections⁵⁰. However, it is not clear whether the enhanced healing was due to calendula or other ingredients in the salve.

15. **Other/miscellaneous**: none

Toxicity and Contraindications

All herbal products carry the potential for contamination with other herbal products, such as pesticides, herbicides, heavy metals and pharmaceuticals.

Furthermore, allergic reactions can occur to any natural product in sensitive persons.

Allergic reactions to calendula are possible but rare⁵¹. Allergic reactions are possible with all members of the Compositae family.

Potentially toxic compounds in calendula: None.

Acute toxicity: No reports of acute toxic exposures related to calendula have been made to poison control centers⁵².

Chronic toxicity: None reported; in vitro studies in fungi showed some genotoxic effects, but there were no mutagenic effects in mouse bone marrow⁵³.

Limitations during other illnesses or in patients with specific organ dysfunction: None known.

Interactions with other herbs or pharmaceuticals: Due to animal studies suggesting increased sleep time in animals given calendula with sedative medications, some herbalists caution against internal use of calendula by patients who are taking sedatives¹⁶⁻¹⁸. No studies have evaluated this potential interaction in humans.

Safety during pregnancy and/or childhood: Not tested. Presumed safe for topical use. Internal use of calendula is traditionally contraindicated during pregnancy due to its presumed uterinstimulant effects¹⁶. No studies have evaluated its safety during pregnancy, lactation or childhood.

Typical Dosages

Provision of dosage information does NOT constitute a recommendation or endorsement, but rather indicates the range of doses commonly used in herbal practice.

Doses are given for single herb use and must be adjusted when using herbs in combinations.

Doses may also vary according to the type and severity of the condition treated and individual patient conditions.

Calendula tea: Add 1 to 2 grams (1 to 2 tsp.) dried flower heads to 1 cup of boiling water, steep for 5-10 minutes and strain. The typical dosage is two to three cups a day⁶.

Tincture (1:9 in 20% alcohol): 2-4 ml per ¼-½ cup of water⁵⁴.

Tincture (1:5 in 90% alcohol): 0.3-1.2 ml three times daily⁵⁵

All preparations must be protected from light, moisture and heat ⁴.

See Also:

Calendula Clinician Information Summary:

<http://www.mcp.edu/herbal/calendula/calendula.cis.pdf>

Calendula Patient Fact Sheet: <http://www.mcp.edu/herbal/calendula/calendula.ph.pdf>

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