

# CALENDULA

## *Calendula officinalis*

### *Family*

Asteraceae (formerly Compositae) family, commonly referred to as the daisy or sunflower family. Take care not to be confused with ornamental marigolds of the *Tagetes* genus.

### *Parts Used*

Flower

### *Description*

Calendula is an annual herb, native to Europe and parts of Asia, that has been cultivated since the 12th century. It is a dense, self-seeding plant that grows to a height of 30 to 60 centimetres, with simple oval green leaves on angular branched stems and a pithy hollow core. Bright yellow, deep gold or vibrant

orange flowers are borne on elegant crown-shaped receptacles. It grows in full sun and is known to attract butterflies.<sup>1,2</sup>

### *Traditional Use*

In Ancient Roman times calendula was called *sponsa salis* which means the 'bride of the sun'. Calendula has also been described as 'herbal sunshine'. It's radiant golden-yellow or orange flowers not only look like the sun but they open and close with the sun. On a hot day the sun pulls the medicinal resins up into the flowers making them very sticky. In addition to being used as medicine, calendula has also been used as a flavouring and food for hundreds of years. The old custom of adding its flowers to salads or the 'pot' gives it one of its common names pot marigold. It was popularly added to rice to impart a saffron-like colour and



was also historically used in soups and broths. The culinary use of calendula dates back to ancient Rome. Common people could not afford to buy saffron (*Crocus sativus*) and they discovered that powdered calendula petals were an excellent substitute which is why it has been called “poor man’s saffron”. Calendula is a hardy, vibrant herb that blooms for many months in the year hence it gets its name from the Latin *calends*, which means ‘throughout the months’, the same root word as calendar. It is a commonly found favourite in many gardens being no fuss and low maintenance and one of the easiest plants to grow from seed. This ubiquity means calendula is often thought of as an introductory herb, yet it is a profoundly deep and versatile remedy that even the world’s best herbalists are still learning about.<sup>3 4</sup>

Cheerful, sunny calendula flowers hold pride of place amongst herbalists as a topical first aid remedy for skin problems including rashes, itchy skin, minor wounds and cuts, nappy rash, burns and insect bites. This is why it holds pride of place in the family medicine cabinet. As a compress, its effectiveness in healing bullet wounds was reported enthusiastically by Dr R.G Reynolds in the American West in 1886. Calendula is also helpful in healing the “internal skin,” which is the mucous membranes. Internally it is used for inflammation and ulceration of the digestive tract. In addition to being the first choice for many herbalists for skin issues calendula also stimulates the immune and lymphatic systems, supports liver health and is antimicrobial.<sup>5 6</sup>

Calendula tincture can be applied directly to acne and chicken pox spots to ease the itching and eruptions. Calendula is also known as one of the best gentle bitter tonic and lymphatic alterative remedies with a focus on the bowels, liver, skin and lymphatic system. It is also used for gastrointestinal, gynaecological and eye diseases. One of the United States’ most renowned herbalists, author Matthew Wood, says it’s specific for “those places where the sun don’t shine,” such as the armpits, the nodes along the neck and the groin. This also means it has a tonic action upon the immune system. Calendula’s bitter tonic properties enhance the function of the liver, helping to cleanse the body of toxins. This action, along with being a reliable emmenagogue, means it has an affinity for the female reproductive system it can also regulate menstruation and

relieve menstrual cramps. Well known women’s herbalist Ruth Trickey uses calendula internally for acne, breast lumps, vaginal dryness, reducing fibroids, cervical eversion, cervicitis, endometriosis, excessive menstrual flow and pelvic infections.<sup>7 8</sup>

These applications have been summed up perfectly by Sajah Popham, founder of Organic Unity and The School of Evolutionary Herbalism, and author of the book *Evolutionary Herbalism*: “In short, calendula is best used when someone has a degree of psychological melancholy, immunological deficiency, lymphatic stagnation, and inflammation in the digestive system with a likelihood of food intolerance. In this case, the root of the problem lies in the gut and calendula’s action upon the psychological spectrum is likely due to its influence upon the gastrointestinal tract. We want to specifically use it when the psychological depression is supported by physiological depression as well, thus the remedy matches the entire axis of influence needed by the individual. Matthew Wood also notes it has a “positive psychological effect for people with fear of cancer.”<sup>9</sup>

## Constituents

Flavonoids (including hyperoside, rutin and quercetin), polysaccharides, triterpenoid saponins (including oleanolic acid), volatile oil, carotenoids (lutein), quinones, resins, coumarins (scoplotetin, umbelliferone), amino acids, carbohydrates (polysaccharides and monosaccharides), fatty acids, minerals such as calcium, sodium, potassium, magnesium, iron, copper and manganese.<sup>10 11</sup>

While calendula is filled with flavonoids and antioxidants it is more than the sum of its isolated constituents. For example, one *in vitro* study shows that when compared to the isolated constituent of quercetin, calendula as a whole plant works better to decrease human gingival fibroblast mediated collagen degradation. The researchers said this may be attributed to additional components in calendula other than quercetin.<sup>12</sup>

## Actions

Antimicrobial, anti-inflammatory, antioxidant, immunomodulatory, wound healing, vulnerary, cholagogue, astringent (non-tannin), antispasmodic,

emmenagogue, slightly demulcent, diaphoretic, lymphatic, anti-fungal.

## *Pharmacological Activity*

### **Anti-Inflammatory and Wound Healing Activity**

Based on the results of a 2023 study calendula may have beneficial healing properties, and be effective, in accelerating the healing of second-degree burn wounds and can be used as a supplement to treat wounds. In this clinical trial 60 patients hospitalised in an Iranian burn ward, who met the inclusion criteria, were randomly assigned to two groups, 30 in the intervention group and 30 in the control group. The most common cause of burns, with a frequency of 36.7%, was a gas explosion in the intervention group and fire in the control group. Boiling water, electricity and acid were other causes. In addition to the usual treatments received in the burn ward, the intervention group received one capsule (2g) of calendula daily, for two weeks, and the control group received the placebo. Wound status was assessed on the 1st, 7th and 15th days of the study in both groups. Wound healing scores in the two groups increased during the 1st to 15th days of the study. However, in the intervention group, the range of wound healing changed on days seven and 15 and was greater than in the control group.<sup>13</sup>

A 2020 randomised trial found that calendula ointment significantly reduces pain after episiotomy. Episiotomy is associated with an increased risk of postpartum pain, bleeding and painful intercourse. Fifty women used calendula ointment four hours after the episiotomy and then every eight hours for 10 days. Women who received calendula ointment after episiotomy compared to standard care had a significantly lower pain level starting from day two and during all the follow-ups. Calendula ointment also improved wound healing in terms of redness and oedema.<sup>14</sup>

Calendula appears to be a safe topical therapy in the treatment and prevention of radiation-induced skin toxicity, however the evidence for its use remains weak. Upon receiving radiation therapy, up to 95% of patients suffer from radiation-induced skin damage, which can be significant enough to cause dose constraints. Management of this significant side effect is essential given

its high incidence and considerably negative impact on quality of life. Many patients search for complementary and alternative medicine therapies to provide a solution for this condition. Given the potential promise of calendula as an anti-inflammatory and antioxidant, there have been numerous developments in this area in the clinical setting. Studies outside of radiodermatitis have shown some promise. Calendula has been noted to increase skin healing in oral mucositis second to 5-fluorouracil (a cytotoxic chemotherapy medication used to treat cancer) treatment compared to a control gel base. Likewise, in a randomised study of 40 head and neck cancer patients receiving radiotherapy, those receiving calendula mouthwash had a significantly lower intensity of oropharyngeal mucositis compared to placebo at two, three and six weeks. A randomised trial comparing prophylactic trolamine (a topical analgesic) versus calendula in preventing acute dermatitis grade 2 or greater in breast cancer patients receiving radiotherapy demonstrated a significantly decreased incidence of acute dermatitis, interruptions in planned radiation schedule, and radiation-induced pain in patients using calendula compared to patients using trolamine. However, these results may have been influenced by the significantly lower adherence to the calendula treatment (30% of patients), possibly due to the cream's consistency or difficulty in application. As such, this study may in fact demonstrate the negative impact of trolamine on radiodermatitis rather than the efficacy of calendula. This study highlights the need for future studies.<sup>15</sup>

The findings of a prospective, descriptive pilot study suggest that calendula is safe and has a beneficial effect on diabetic foot ulcer healing. The rapidly increasing rates of diabetes make diabetic foot ulcers a major public health issue. These ulcers have been shown to reduce patient quality of life and may ultimately lead to severe pain, prolonged hospitalisation and/or amputation of the lower extremities. Patients were evaluated biweekly for 30 weeks or until healing (i.e., full epithelialisation with no wound drainage) occurred. Patients' ulcers were treated twice daily with calendula hydroglycolic extract spray solution and covered with saline-moistened, sterile, nonadherent gauze and bandages. Following this, patients were provided cushioned footwear, diabetic boots,

crutches and wheelchairs to offload the affected areas. Patients received their first treatment in the clinic then performed care at home. Forty-one patients completed the trial and were included in the analysis. A systematic review of the literature, that included 10 clinical trials on the performance of standard diabetic foot ulcer treatments, reported completely healed wounds in an average of 24% of patients at 12 weeks and in 30% of patients at 20 weeks; this data was used as a benchmark. This pilot study demonstrated 54% of diabetic foot ulcers were completely healed at 11 weeks and 68% at 20 weeks using calendula. The average healing time to complete re-epithelialisation was approximately 16 weeks. At the study's conclusion (30 weeks), 78% of all wounds had achieved complete closure. No adverse events occurred, and the percentage of wounds with an unpleasant wound odour and wound pain ratings were significantly reduced at the end of the treatment period.<sup>16</sup>

In an observational cohort study on 41 patients with a diagnosis of pressure ulcer (bed sores) that was stable in size for more than three months, the therapeutic benefits of a hydroglycolic spray extract of calendula were evaluated. Patients were assessed every two weeks, for 30 weeks, for reduction of the wound area, infection control, types of tissue and exudate and ulcer microbiology. The proportions of patients who were completely healed after 15 and 30 weeks of treatment were 63% and 88%, respectively.<sup>17</sup>

In a prospective non-randomised controlled study 38 patients treated with a hydroglycolic spray extract of calendula and 19 control patients were evaluated every two weeks for 30 weeks or until their ulcers healed. The patients in the control group were treated using the hospital's standard procedure, which included the use of collagenase (an enzyme that breaks down collagen in damaged tissue and helps healthy tissue to grow), chloramphenicol (an antibiotic) and silver sulfadiazine (a topical antibiotic). Twice a day the ulcers were cleaned with 25mL sterile physiological saline solution immediately before application of the calendula or the standard of care product. The extract was sprayed on the wound bed and allowed to dry for a few minutes. Conventional dressings with sterile non-adherent gauze and non-elastic supportive bandages were used in all

patients. Assessments included the determination of the wound area by planimetry (digital tracing of the perimeter of a wound to calculate wound area), infection control and evaluation of the clinical aspects of the wounds. The percentage of healing velocity per week, taking the initial area at baseline into account, was also determined. The proportion of the treatment patients achieving complete epithelialisation was 72% and 32% in the treatment and control groups, respectively. The average healing time was approximately 12 weeks in the treatment group and 25 weeks in control patients. Patients with ulcers treated with calendula had a significant four-fold increase in percentage healing velocity per week, 7.4%, compared with 1.7% in the control group.<sup>18</sup>

In an older observational study it was found an ointment of calendula (65g flowers were extracted with absolute ethanol then dried and dispersed in a neutral base at a concentration of 7.5%) can aid in wound healing by promoting epithelial growth and by enhancing immune responses. For lower leg venous ulcers, research showed outcome measures that included the total surface of ulcers and the number of participants who experienced complete epithelialisation. The experiment was carried out in 34 patients with venous leg ulcers. Compared to the placebo group who had saline solution dressings applied for three weeks (13 patients with 22 venous ulcers), participants treated with calendula applied twice a day for three weeks (21 patients with 33 venous ulcers) showed a significant acceleration of wound healing (expressed as the surface of the ulcers). Also, more participants treated with calendula experienced complete epithelialisation compared to the placebo group. The reviewers concluded that treatment with calendula significantly accelerated the healing of venous leg ulcers.<sup>19</sup>

## Indications

- Enlarged or inflamed lymph nodes, breast cysts, pelvic cysts, sore throats and tonsillitis, heavy rings under the eyes, poor healing from wounds or chronic infections, fatigue.
- Inflammation and ulceration of the digestive tract (gastric and duodenal ulcers), intestinal bloating, food intolerances, allergies, leaky gut.



- Female reproductive system problems such as liver support, irregular menstruation, menstrual cramps, breast lumps, vaginal dryness, fibroids, cervical eversion, cervicitis, endometriosis, excessive menstrual flow and pelvic infections.
- Topically for numerous skin problems including for skin inflammations, acne, rashes, itchy skin, minor wounds and cuts, boils, nappy rash, mastitis, burns, insect bites, eczema, mouth ulcers, chicken pox, herpes simplex and shingles, sprains and bruises, leg ulcers, varicose veins, haemorrhoids and fungal skin infections.

### *Energetics*

Warming, drying, pungent, bitter.<sup>20</sup>

### *Use in Pregnancy*

Insufficient reliable information is available to assess safety however due to its emmenagogue effects it is suggested to be avoided for internal use during pregnancy. Topical use during pregnancy on the other hand is acceptable.<sup>20 21</sup>

### *Contraindications*

Although there have been some reports of allergic reactions to calendula these are very rare. Calendula is generally well tolerated by children and adults.

People who are sensitive or allergic to foods or plants from the Asteraceae (previously Compositae) family should use calendula with caution.<sup>23</sup>

### *Drug Interactions*

Calendula may be beneficial with radiation therapy due to possible decreased adverse effects. Preliminary evidence suggests that topical application of calendula may improve dermatitis in patients receiving radiation therapy for breast cancer. Medical supervision is recommended. While it is unlikely to be clinically significant, animal studies suggest oral calendula may have sedative effects so concomitant use with central nervous system (CNS) depressant drugs (such as benzodiazepines, barbiturates and certain sleep medicines) may theoretically increase sedation, so it is recommended to monitor these patients.<sup>24</sup>

### *Administration and Dosage*

|                              |            |
|------------------------------|------------|
| Liquid Extract:              | 1:1        |
| Alcohol:                     | 60%        |
| Weekly Dosage: <sup>25</sup> | 10 to 20mL |



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