

# ELECAMPANE

## *Inula helenium* L.

### *Family*

Asteraceae or Compositae (the daisy or sunflower family). The genus *Inula* comprises several species of reputed medicinal value (*Inula helenium*, *Inula racemosa*, *Inula viscosa* and *Inula britannica*).<sup>1</sup>

### *Parts Used*

Root.

### *Description*

Elecampane is a herbaceous perennial native to Europe but it has become naturalised in temperate regions such as Asia and America. It can grow up to three metres high and has yellow daisy like flowers which resemble sunflowers. As a result it is

often planted in gardens due to its tall stature and beautiful flowers. The alternate leaves, which have a downy covering, embrace the stem and have a toothed margin. They are large at the base and become smaller towards the top of the plant. The thick aromatic root is rich in mucilage.<sup>2,3</sup>

### *Traditional Use*

Elecampane has an ancient medicinal reputation and was described by Dioscorides and Pliny in the first and second centuries. Pliny said "let no day pass without eating some of the roots of Enula, considered to help digestion and cause mirth (cheer)". Traditionally the roots of elecampane have been widely used as a treatment for cold, congested conditions and bronchitis, cough, lung disorders, tuberculosis, arthritis, rheumatism, intestinal ulcers,



chronic gastritis, indigestion, diabetes, infections, dermatitis and paediatric diseases.<sup>4</sup>

One explanation for the Latin name *helenium* comes from the legend of Helen of Troy (she of the face that launched a thousand ships) who was said to be wearing an elecampane flower in her hair when she was abducted from her homeland by the Trojan prince Paris which started the Trojan wars. The legend says that she was so heartbroken to be taken from Sparta that one of these plants emerged wherever her tears fell. Elecampane is mentioned in Minoan (Crete), Mycenaean (Greece), Egyptian/ Assyrian manuscripts and the Chilandar Medical Codex (a medieval Serbian manuscript) where it was used to treat abnormal tissue growth, wounds, freckles and dandruff. In fact it was a panacea plant for the ancient Greeks and Romans used for everything from oedema and uterine disorders to digestive and respiratory complaints. A European traditional preparation was to infuse the root in port with currants and sugar for its digestive and antiparasitic properties. American Indians, traditional Chinese and Ayurvedic practitioners recommend it for respiratory problems including asthma and bronchitis.<sup>5</sup>

Nicholas Culpeper wrote 'Elecampane relieves cough, shortness of breath and wheezing in the lungs' and he also claimed it 'cures worms in the stomach...and is also profitable...for the stopping of women's courses'. A popular treat for whooping cough in those days was an elecampane lozenge.<sup>6</sup>

Elecampane is a general warming and stimulating remedy that gets things moving. It has a long history of use as a tonic herb for the respiratory system and is specific to bronchial infections. It is warming and clearing to the lower respiratory system and along with moving stuck mucous, and restoring healthy mucous, it is strongly antimicrobial.

While most commonly used for congestion in the lungs it can also be used for stuck mucous in the sinuses or to correct post nasal drip. In addition to being an excellent expectorant it also soothes the tissue irritation and inflammation that results from coughing. In addition to its well known respiratory properties it supports digestive function and traditionally it was used for all sorts of digestive woes from intestinal parasites to stagnant digestion to imbalanced intestinal flora.<sup>7</sup>

## Constituents

Sesquiterpene lactones, mainly alantolactone and isoalantolactone (collectively known as helenin), are considered active ingredients. It also contains inulin polysaccharides (well known for its prebiotic effect), volatile oil, mucilage, sterols, saponins and resins.<sup>8</sup>

## Actions

Expectorant, antispasmodic, anti-inflammatory, antitussive, diaphoretic, antimicrobial, diuretic, carminative, vermifuge, emmenagogue.

## Pharmacological Activity

Human trials for elecampane are lacking however there is some preclinical evidence.

### Anti-inflammatory Activity

The anti-inflammatory effects of elecampane were explored in a 2018 preclinical study which suggested that isolated constituents inhibited the development of atopic, dermatitis like skin symptoms by regulating cytokine expression and may be an effective alternative therapy for atopic dermatitis.<sup>9</sup>

A previous 2017 study suggested there is potential for the use of elecampane in the treatment of rheumatoid arthritis. The *in vitro* effects of elecampane on the activation of signalling pathways and expression of inflammatory genes was examined. Its *in vivo* anti-inflammatory effects were evaluated in induced arthritis rat models. The positive effects were dose dependent.<sup>10</sup>

### Antioxidant and Anticancer Activity

Three constituents in elecampane were studied in a 2019 *in vitro* experiment for their anti-tumour and anti-proliferation activity on pancreatic cancer cells. Synergistic studies had nearly the same results as the studies on isolated isoalantolactone.<sup>11</sup>

In an earlier 2018 preclinical study a sesquiterpene lactone enriched fraction of elecampane inhibited the growth of human breast xenograft tumours and induced apoptosis in breast cancer cells. The findings demonstrated the potential of elecampane as a promising phytomedicine for the treatment and prevention of triple-negative breast cancer.<sup>12</sup>

Elecampane has a potential application as a free radical scavenger due to the presence of polyphenols, and it could be a rich source of dietary fibre with a potential prebiotic effect due to the presence of the polysaccharide inulin and fructooligosaccharides. A recent *in vitro* study found elecampane to be a valuable source of fructans from inulin which is classified as soluble dietary fibre. Because of this the researchers concluded that elecampane could be successively applied in nutrition formulas for stimulating the gastrointestinal tract and immune system.<sup>13</sup>

#### Antimicrobial Activity

An *in vitro* study found that elecampane eliminated 100 percent of methicillin-resistant *Staphylococcus aureus* strains, however no human clinical trials have been performed. The researchers concluded that this plant possesses compounds with potent antistaphylococcal properties, which in the future could be used to complement infection control policies and prevent staphylococcal infection and carriage.<sup>14</sup>

Although it was 20 years ago elecampane exhibited significant activity against *Mycobacterium tuberculosis* in a bioassay guided search for antimycobacterial compounds lending credence to its traditional use for tuberculosis.<sup>15</sup>

A study in the British Medical Journal in 1891 concluded that a constituent of elecampane, helenine, had a protective action against guinea pigs infected with tuberculosis. The researcher also concludes by saying "I do not think I am justified in saying that any one of the constituents of elecampane root possesses greater value than the mixed product; probably this would meet all the requirements of clinical experiment." This is a rare sentiment to encounter in modern research when whole plants have been reduced to single constituents.<sup>16</sup>

#### Indications

- Respiratory disorders including deep seated respiratory infections; persistent, congested, stubborn wet or dry coughs; post nasal drip; tuberculosis; bronchitis; whooping cough; the common cold, influenza and other respiratory infections; fever with chills; swollen lymph nodes
- Weak, stagnant digestion, to support healthy gut flora (prebiotic), excess gas, intestinal parasites, nausea, diarrhoea, peptic ulcer
- Urinary and pelvic stagnation
- Convalescence and malnutrition

#### Energetics

Warming, drying, pungent, bitter, sweet.

#### Use in Pregnancy

It is traditionally known as a uterine stimulant to promote menstruation so its use is not recommended in pregnancy.

#### Contraindications

Should be avoided by those with sensitivity to other plants in the Asteraceae family.<sup>17</sup>

#### Drug Interactions

Caution with central nervous system depressant drugs.

#### Administration and Dosage

Liquid Extract:	1:1
Alcohol:	30%
Weekly Dosage: <sup>18</sup>	20 to 80mL

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