



HERBAL MONOGRAPH

Chickweed

Stellaria media - Starweed



Stellaria media: Image from Naabe Methe www.commongardenhealth.com

Identification Pointers: Multi-branched ground cover that extends considerable lengths. Thin, green, juicy stems. White “star flowers” have five petals that are split lengthwise and joined at the base, so appear as ten (7).

Common misidentification: Look for the single line of hairs that run only along one side of the stem until it reaches a pair of leaves, then runs along the opposite side of the stem (7). Before flowering, chickweed could be confused with petty spurge (*Euphorbia peplus*) which has a milky sap (2).

Where it grows: Chickweed is said to be found in all corners of Earth. It is native to all temperate and North Arctic regions and has naturalised itself everywhere (7).

Growing conditions: New growth begins in late winter/early spring and continues throughout summer if not too hot or will re-sprout in the Autumn as temperatures cool and rain increases. Harvest top parts with scissors regularly to encourage new, luscious growth (7).

Safety: Allergy to chickweed causing contact skin redness has been reported. Apply a test patch to a small area before applying more widely (2).

Parts used: Clean aerial parts (leaves, stems and flowers) are used mostly fresh (7).



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Uses: “Chickweed generally helps all parts of the pains in the body that arise from heat”(3) Fresh leaves as a topical poultice for inflammation, swelling, bites, sores, slow healing ulcers, and to draw out splinters (7). As a “poultice enclosed in muslin is a sure remedy for a carbuncle or an external abscess.

The water in which the Chickweed is boiled should also be used to bathe the affected part” (7). Chickweed juice infused oil or ointment to heal inflammatory skin conditions, minor cuts and wounds (13). It is especially used for the itching and irritation associated with eczema & psoriasis (2, 8).

Chickweed is known as a “joint-oiler” remedy for rheumatism. It can be taken internally or externally in the bath or as a poultice to relieve inflammatory joint pain and restore elasticity and strength to tendons and ligaments (8,11).

Nutritionally rich in essential vitamins A, B complex, C, and minerals including calcium, iron and potassium (1, 2). It is also rich in steroidal saponins that increase cellular permeability to improve absorption of nutrients, especially minerals through the digestive mucosa (13). Chickweed can be chewed to alleviate bad breath (11). In India it has been used traditionally as an antacid (12). As tea, 2 tsp freshly chopped chickweed steeped in 1 cup of boiling water for 10 mins & consumed ½ an hour before meals may enhance weight loss (13).

Chickweed is combined with other herbs to treat conditions characterised by fever and bronchial phlegm (2). Saponins are thought to gently irritate and reduce thickening of respiratory mucous membranes and aid expectoration (2), whilst also dissolving bacterial membranes along the respiratory tract (13).

Herbal Actions: Demulcent, expectorant, refrigerant, anti-pyretic, vulnerary, emollient, anti-pruritic, alterative, anti-rheumatic, mild diuretic and laxative, carminative, nutritive, restorative (2, 7, 13).

Traditional Stories: Ancient Romans regarded Chickweed as the “elixir of life”(6). Many people during times of famine or war have appreciated chickweed as a survival food due to its nutritional



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content and ease of growth. (11) “Think of chickweed as being as soft as slippery elm, as soothing as marshmallow, and as protective and strengthening as comfrey root” (13). It is called chickweed, due to it’s popularity amongst young chickens and caged birds.

Scientific evidence: Potential anti-obesity effect in animal studies, indicated it may reduce absorption of dietary fat and carbohydrates (10). Coadministration of chickweed with the mumps vaccine in mice improved immunisation outcomes by stimulating humoral response, which presented in elevation in numbers of white blood cells, phagocytosis index and generated robust anti-Mumps antibody responses (4). Chickweed extract containing flavonoid Cglycosides, polysaccharides and protein, showed antiviral activity against the Hepatitis B virus in an in vitro study (9). Isolated water soluble polysaccharides extracted from Chickweed improved liver regeneration and protected against hepatocyte necrosis in rats (2).

Dose: Fresh chickweed tincture 20-90 drops per day in water (13). 1:5 tincture: 2-10ml 3 times daily (2). Dried chickweed infusion (1-5g) 3 times day (2).

Ointment: 1 part chickweed to 5 parts base - apply as required (2). Salad: Chop a handful or two and add to salad greens.



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Herbal Recipes

Chickweed Dip: 2 cloves garlic, 1 small red/white onion or spring onion, 2 cups fresh chickweed, 1 ripe avocado, 1/2 cup almonds toasted in frypan, 1/3 cup pitted kalamata olives, 3 tbsp chopped mustard leaves, 2 tbsp white miso, 1 tsp cayenne pepper, salt & lemon juice. Place all ingredients, except lemon juice and salt. Blend well. Scoop into bowl. Add lemon juice & salt to taste (5).

Chickweed and Basil Pesto: In a food processor blend 1 cup each of fresh basil leaves & fresh chickweed tops, 2 cloves garlic, 1/2 cup olive oil & juice of 1/2 lemon, 1/2 cup of parmesan (or 2 tbsp of white miso). Blend until desired consistency. Add 1/2 cup of sunflower seeds or pine nuts. Blend briefly. Add salt or lemon juice as desired (11).

Frittata: 1 onion or 4-5 spring onions chopped, 2 cups chopped chickweed tops, 5 eggs whisked, salt and pepper to taste. Optional extras: dried herbs, fetta, grilled capsicum. Sautee onions in a frypan with salt and pepper until soft, add chickweed and continue to cook until wilted. Add extra herbs if using. Pour in eggs and cook on medium heat for 5 mins. Add crumbled fetta & grilled capsicum. Place under grill to brown for 5 mins.

Mild curried chickweed: 3 tbs oil, 1 tsp cumin seeds, 2 tsp mustard seeds, 1 tsp turmeric, 4 cups chopped chickweed, 1 tbs lemon juice, 1 tbsp tamari. Heat oil in a pan, Add seeds, cook for 2 mins. Stir in turmeric & cook for 1 min. Turn off heat and stir through chickweed, lemon juice and tamari (13).

Monograph Compiled by Naabi Methe www.commongardenhealth.com



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Cichorium intybus



Chicory by Jessica Caven

Season: *Cichorium intybus*, grows in spring and early summer with flowering beginning in late spring (HerbiGuide, n.d).

Latin Name: *Cichorium intybus*

Common Name: Chicory

Other names: Succory (The Project Gutenberg 2015 p. 675-676, Fisher 2009 p. 35), Kasni (Sanskrit) (Saeed et al. 2017 p. 352), Hendibeh (Grievess 1992 p. 197), Wild Endive (Himalya Wellness, 2020), blue daisy, blue dandelion, blue sailors, blue weed, coffeeweed, horseweed, ragged sailors, wild bachelor's buttons (Atlas of Living Australia n.d), Belgium endive, witloof (Queensland Government, 2016).

Grievess, in 'A Modern Herbal', discusses the history of its name by saying, "It has been suggested that the name Succory came from the Latin succurrere (to run under), because of the depth to which the root penetrates. It may, however, be a corruption of Chicory, or Chichorium, a word of Egyptian origin, which in various forms is the name of the plant in practically every European language"



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(Grievés 1992 p. 197). She goes on to say, “The Arabian physicians called it ‘Chicourey.’ Intybus, the specific name of the Chicory, is a modification of another Eastern name for the plant – Hendibeh. The Endive, an allied but foreign species (a native of southern Asia and northern provinces of China) derives both its common and specific names from the same word” (Grievés 1992 p. 197).

Pointers on identification:

Chicory’s leaves are green and toothed and the plant produces delicate blue flowers (Daisley 1989 p. 76, Grubb 2019 p. 124). “The leaves are toothed, somewhat like the dandelion, which it resembles” (Hall, 1978 p. 86). It is also similar to the dandelion as it is a perennial tap root (Grievés 1992 p. 197).

Chicory grows between 3-5 feet high and displays blue daisy like flowers that bloom along tall stems that flower daily. Blooming time varies between locations with most opening at sunrise and closing in early afternoon (Hall, 1978 p. 85, Fisher 2009 p. 35).

The Atlas of Living Australia describes the plant, “When flowering, chicory has a tough, grooved, and more or less hairy stem, from 30 to 100cm (10 to 40 in) tall. The leaves are stalked, lanceolate and unlobed. The flower heads are 2 to 4cm (¼ to ½ inches) wide, and usually light purple or lavender and it has been described as light blue, rarely white and pink.” It goes on to say, “Of the two rows of involucral bracts, the inner is longer and erect, the outer is shorter and spreading” (Atlas of Living Australia n.d).

Grievés, discusses the flowers as, “The flowerheads are numerous, placed in the axils of the stem-leaves, generally in clusters of two or three. When fully expanded, the blooms are rather large and of a delicate tint of blue: the colour is said to specially appeal to the humble bee (Grievés 1992 p. 197).



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Culpeper states, “The wild Succory hath divers long leaves lying on the ground, very much cut in or torn on the edges, on both sides, even to the middle rib, ending in a point; sometimes it hath a rib down to the middle of the leaves, from among which rises up a hard, round, woody stalk, spreading into many branches, set with smaller and less divided leaves on them up to the tops, where stand the flowers, which are like the garden kind, and the seed is also (only take notice that the flowers of the garden kind are gone in on a sunny day, they being so cold, that they are not able to endure the beams of sun, and therefore more delight in the shade) the root is white, but more hard and woody than the garden kind.” (The Project Gutenberg 2015 p. 676, Culpeper 1992).

Common misidentification. What to look for to ensure you have the correct species:

Chicory is commonly confused with the vegetable, endive, with some even confusing their names (Hall 1978 p. 86). In the USA, “Chicory” is the common name for curly endive (*Cichorium endivia*), a species closely related (Atlas of Living Australia n.d).

Culpeper in ‘The Complete Herbal’, describes Chicory as, “The garden Succory hath long and narrower leaves than the Endive, and more cut in or torn on the edges, and the root abides many years. It bears also blue flowers like Endive, and the seed is hardly distinguished from the seed of the smooth or ordinary Endive.” (The Project Gutenberg 2015 p. 676, Culpeper 1992).

Sea lavenders, Limonium species, are similar in appearance to chicory with clusters of purple flowers. Although, flower centres are white or yellow (HerbiGuide n.d). Skeleton weed, *Chondrilla juncea*, is also similar, however, the flowers are yellow (HerbiGuide n.d).



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Where you find it (geography): REGION OF AUST: Chicory is found in Europe, Asia (Hall, 1978 p. 85, Atlas of Living Australia n.d.) North America and Australia (Daisley 1989 p. 76, Atlas of Living Australia n.d).

In 'The Complete Herbal', Nicholas Culpeper states, "This grows in many places of our land in waste untilled and barren fields. The other only in gardens" (The Project Gutenberg 2015 p. 676, Culpeper 1992).

Growing conditions: Chicory prefers cooler climates, however, will grow in most conditions with good soil (Daisley 1989 p. 76). Pests usually do not disturb chicory (Daisley 1989 p. 76).

Dorothy Hall in 'The Book of Herbs' refers to Chicory as a "pot-herb, almost a vegetable" and mentions it is rich in a variety of nutrients (Hall, 1978 p. 85). Chicory is easy to grow and can be grown purely for its ornate flowers (Hall 1978 p. 85).

Belgian or Brussels Chicory are grown throughout Europe. In France and Italy is used as cattle fodder due to its high nutritional content (Hall 1978 p. 85).

Safe usage pointers (contra indications): Generally, oral consumption of chicory appears to be safe and well-tolerated (Olsen et al. 2010 p. 1, Street et al. 2013 p. 7). Some constituents of chicory, such as inulin and fructo-oligosaccharides, can lead to excess fibre consumption resulting in mild gastrointestinal side effects such as flatulence, bloating and abdominal discomfort (Bonnema et al. 2010 p. 868).

At doses of 600mg, three times a day for one month, Chicory has been found to be safe in humans (Olsen et al. 2010 p. 2).



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Asthma and rhinoconjunctivitis has been recorded with occupational exposure to the chicory plant (Pirson, Detry, Pillette 2009 p. 306-310).

Chicory, part of the Asteraceae family, can lead to hypersensitivity (Street 2013 p. 9, European Medicines Agency 2013 p. 3) and allergic reactions such as pruritus, contact dermatitis and skin rashes (Friis et al. 1975 p. 311-313), which may lead to anaphylaxis (Willi et al. 2009 p. 226-227).

Chicory is likely to be unsafe in large amounts during pregnancy (European Medicines Agency 2013 p. 4, Brinker 1998) and may bring on menstruation or miscarriage (Brinker 1998). Chicory should be avoided in children under 12 years due to insufficient evidence to support its safety (European Medicines Agency, 2013 p. 3).

In vitro research has revealed antidiabetic effects of chicory, leading to a theoretical risk of hypoglycaemia in those taking antidiabetic drugs due to additive effects (Street et al. 2013 p. 6-7).

“If used in excess as a medicine it is said to bring about loss of visual power in the retina” (Grievess 1992 p. 199).

Energetics: Botanist, John Gerard, discussed the medicinal use of chicory by saying, “These herbs when they are green have the virtue to cool the hot burning of the liver” (Daisley 1989 p. 76). Bone & Mills, in ‘Principles and Practice of Phytotherapy’, describe chicory as a “cooling bitter” that can be used to reduce febrile temperature, while also stimulating digestion (Bone & Mills 2013 p. 147).

Culpeper refers to chicory as “an herb of Jupiter” (The Project Gutenberg 2015 p. 677).



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Actions: Note: Most research on *Cichorium intybus* have been conducted via *in vivo* or *in vitro* research and may not be replicated in humans.

- Gastroprotective, *in vivo* research shows chicory may prevent ulcer development (Street et al. 2013 p. 6, Daisley 1989 p. 76, Saeed et al. 2017 p. 354)
- Anti-inflammatory (Saeed et al. 2017 p. 354, 356, Street et al. 2013 p. 6) - *In vitro* research indicates that chicory inhibits prostaglandin E2 and cyclooxygenase 2 (COX-2), and inflammatory cytokines (Olsen et al. 2010 p. 1-2, 4-5, Cavin et al. 2005 p. 742-749, Fisher 2009 p. 36).
- Anti-oxidant - *In vitro* research (Saeed et al. 2017 p. 354, 356, Street et al. 2013 p. 6-7, Fisher 2009 p. 36)
- Hepatoprotective and tonic for jaundice - *In vivo*, *in vitro* research and traditional use (Saeed et al. 2017 p. 354, 356, Street et al. 2013 p. 5, Grieves 1992 p. 197).
- Immunostimulatory - *In vivo* research shows alterations in fecal microbiota (Grieshop et al. 2004 p. 483-493, Fisher 2009 p. 36). Oligofructose and inulin have been shown to increase the growth of bifidobacteria (Grieshop et al. 2004 p. 483-493).
- Anti-cancer / Antitumor - *In vivo* (Saeed et al. 2017 p. 356-357, Street et al. 2013 p. 7) and *in vitro* research Street et al. 2013 p. 7).
- Analgesic - *In vivo* research (Saeed et al. 2017 p. 356-357, Atlas of Living Australia n.d, Street et al. 2013 p. 6)
- Anti-allergic - *In vivo* (Street et al. 2013 p. 7-8) and *in vitro* research (Kim et al. 1999 p. 61-65).
- Antimalarial - *In vitro* research, which shows bitter constituents such as lactucin, lactucopicrin and guaianolide sesquiterpenes (Street et al. 2013 p. 3-4, Fisher 2009 p. 36).
- Antimicrobial - *In vivo* (Saeed et al. 2017 p. 356-357, Street et al. 2013 p. 2)
- Sedative - *In vivo* research (Kim et al. 2002 p. 733-742, Saeed et al. 2017 p. 356-357)
- Choleric (Blumenthal et al. 1998, Saeed et al. 2017 p. 353)



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- Prebiotic - *In vitro* research, due to inulin content (Fisher 2009 p. 36) and fructo-oligosaccharides (Bone & Mills 2013 p. 187).
- Antiprotozoal – *In vitro* (Saeed et al. 2017 p. 356-357, Woolsey et al. 2019 p. 1-9)
- Antiparasitic – *In vivo* (Pena-Espinoza et al. 2018 p. 1-14).
- Cholagogue (Street et al. 2013 p. 2)
- Vulnerary (Saeed et al. 2017 p. 353, Sezik et al. 2001 p. 97)
- Hypolipidemic (Saeed et al. 2017 p. 356-357)
- Hypoglycemic (Saeed et al. 2017 p. 354)
- Antidiabetic (Saeed et al. 2017 p. 356-357)
- Hypotension (Saeed et al. 2017 p. 353, Miraldi et al. 2001)
- Antiseptic (Saeed et al. 2017 p. 353)
- Depurative (Saeed et al. 2017 p. 353)
- Mild laxative (Saeed et al. 2017 p. 354, Simmonds, Howes & Irving 2016 p. 56, Fisher 2009 p. 36, Grieves 1992 p. 198) - Due to high inulin content (Simmonds, Howes & Irving 2016 p. 56).
- Reproductive enhancer (Saeed et al. 2017 p. 351, 354)
- Diuretic (Saeed et al. 2017 p. 354, Fisher 2009 p. 36)
- Anthelmintic (Saeed et al. 2017 p. 356-357, Atlas of Living Australia n.d, Street et al. 2013 p. 2).



Actions of Chicory (Saeed et al. 2017 p. 354)



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If medicinal - Uses

Traditionally used as a coffee to aid digestion (Daisley 1989 p. 76, Grievés 1992 p. 198), the bitter properties of chicory, stimulate appetite and improve digestive capacity (Simmonds, Howes & Irving 2016 p. 56). Chicory's traditional actions are similar to those of its cousin, the dandelion (Simmonds, Howes & Irving 2016 p. 56).

Nicholas Culpeper outlines Chicory's medicinal uses in 'The Complete Herbal' as, "An handful of the leaves, or roots boiled in wine or water, and a draught thereof drank fasting, drives forth choleric and phlegmatic humours, opens obstructions of the liver, gall and spleen; helps the yellow jaundice, the heat of the reins, and of the urine; the dropsy also; and those that have an evil disposition in their bodies, by reason of long sickness, evil diet, which the Greeks call Cachexia." (The Project Gutenberg 2015 p. 677, Culpeper 1992).

Culpepper continues by saying, "The distilled water of the herb and flowers (if you can take them in time) hath the like properties, and is especially good for hot stomachs, and in agues, either pestilential or of long continuance; for swoonings and passions of the heart, for the heat and headache in children, and for the blood and liver. The said water, or the juice, or the bruised leaves applied outwardly, allay swellings, inflammations, St. Anthony's fire, pushes, wheals and pimples, especially used with a little vinegar; as also to wash pestiferous sores. The said water is very effectual for sore eyes that are inflamed with redness, for nurses' breasts that are pained by the abundance of milk. The wild Succory, as it is more bitter, so it is more strengthening to the stomach and liver" (The Project Gutenberg 2015 p. 678).

Indications: Dose: Interactions known

- Liver and gallbladder obstruction (The Project Gutenberg 2015 p. 677, Culpeper 1992)
- Elevated liver enzymes ALT, AST and ALP (Saeed et al. 2017 p. 356)



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- Gallstones (Simmonds, Howes & Irving 2016 p. 56)
- Liver disease (Saeed et al. 2017 p. 355, Grubb 2019 p. 124)
- Hepatitis (Fisher 2009 p. 36)
- Indigestion (Fisher 2009 p. 36)
- Jaundice (The Project Gutenberg 2015 p. 677, Culpeper 1992, Saeed et al. 2017 p. 354-355)
- Flatulence (Saeed et al. 2017 p. 355, Street et al. 2013 p. 2)
- Abdominal fullness (Saeed et al. 2017 p. 355, Street et al. 2013 p. 2)
- Slow digestion (Saeed et al. 2017 p. 355, Street et al. 2013 p. 2)
- Loss of appetite (Saeed et al. 2017 p. 355, Street et al. 2013 p. 2; Simmonds, Howes & Irving 2016 p. 57, Fisher 2009 p. 36)
- Fluid retention (Fisher 2009 p. 36)
- Gout (Fisher 2009 p. 36, Wang et al. 2019 p. 1-15, Grieves 1992 p. 198)
- Diabetes (Saeed et al. 2017 p. 353, Street et al. 2013 p. 6)
- Diarrhoea (Saeed et al. 2017 p. 353)
- Haemorrhoids (Saeed et al. 2017 p. 353)

If edible - Uses - recipes eg.

Chicory has been traditionally used in salads and as a coffee replacement (Daisley 1989 p. 76, Mitchell & Lynch 1985 p. 11, Grieves 1992 p. 197, Grubb 2019 p. 123). In salads, the blanched head may be cut into thin strips and served with lemon juice (Hall 1978 p. 86). Roots and leaves are mildly bitter in taste with a milky sap (Daisley 1989 p. 76).

Chicory is rich in choline, calcium, copper and iron, which can be cooked as a winter vegetable or eaten raw (Hall 1978 p. 85).



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Inulin, an extract from chicory root, is used in the manufacture of food, as a sweetener, a probiotic in yogurt and for dietary fibre (Atlas of Living Australia n.d). Inulin content in chicory is high at approximately 50% (Simmonds, Howes & Irving 2016 p. 56).

Chicory can be enjoyed fresh in small doses; although, in cooking blanching the hearts (heads) releases a more enjoyable flavour (Hall, 1978 p. 86). When cooking, snip the heart slightly above the root, removing a wedge from the base. This allows for the heat to infiltrate, which reduces the cooking time, while conserving the benefits (Hall, 1978 p. 86).

Chicory is best when eaten fresh, however, if stored in an airtight container in the dark it can remain fresh for approximately a week (Hall 1978 p. 86).

The leaves are simmered and marinated in olive oil in Albania and used to make byrek, a filled pastry (Atlas of Living Australia n.d).

Cooking reduces the bitterness of Chicory leaves, which then may be sautéed with garlic and anchovies to use in pasta and meals with meat (Atlas of Living Australia n.d).

In southern Europe, chicory leaves are served as an entrée, fried in garlic and oil and/or used in a salad (Simmonds, Howes & Irving 2016 p. 56, Grieves 1992 p. 197).

People and cattle have consumed chicory for its high nutritional content of vitamins C and iron (Daisley 1989 p. 76).

Chicory is commonly used as feed for animals and poultry due to its ability to increase immunity and feed efficiency via reducing GIT pathogens (Saeed et al. 2017 p. 351). Chicory is toxic to pigs (HerbiGuide n.d).



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Infusion:

Chicory root and Dandelion (*Taraxacum officinale*) can be roasted and blended to make a decoction and tea. This is used as a replacement for coffee, minus the stimulating effects (Gladster 2012 p. 127).

“The whole plant is exceedingly bitter”, says Culpeper (The Project Gutenberg 2015 p. 676). Traditionally, a cup of chicory tea involves steeping 2-4 grams of chicory root in 150mL boiling water for 10 minutes before straining (Gruenwald et al. 1998).

Liquid extract:

Root extracts have shown to possess antimicrobial action on *Bacillus subtilis*, *S. aureus*, *Salmonella typhi*, *Micrococcus luteus*, as well as *E. coli in vitro* (Street et al. 2013 p. 2, Shaikh 2012 p. 1-5, Nandagopal & Kumari 2007 p. 17-21). Leaf extracts possess moderate activity against the drug resistant *Salmonella typhi, in vitro* (Street et al. 2013 p. 2, Rani & Khullar 2004 p. 670-673).

Seed:

Seeds are easily germinated and for years remain fresh (Hall 1978 p. 86) and contain a demulcent oil predominantly (Grievés 1992 p. 197). Organic seed extracts have shown antimicrobial activity for *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Escherichia coli* and *Candida albicans* (Street et al. 2013 p. 2).

Externally:

Chicory leaves have been made into a paste and applied to the skin to reduce swelling and inflammation (Worning 2017 p. 21, Grievés 1992 p. 198).



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Roasted Dandelion & Chicory Tea

Creating tea blend:

- Pre-heat oven to 350° F
- Chop up fresh dandelion and chicory roots in equal amounts
- Spread over a tray covered in baking paper
- Bake for 30-40 minutes, roots should become a dark brown
- Cool, then grind using an electric coffee grinder or blender
- Add ¼ to ½ part each of raw chicory and dandelion root (Gladster 2012 p. 127).

Decoction of tea blend:

- Prepare decoction of roots by placing 4-6 tbsp of dried herb into a small saucepan, then add 1 quart of cold water. Using a low heat bring to simmer, cover then leave for 25-45 minutes. To make a stronger decoction simmer for only 20-30 minutes. When completed place mixture in a jar and allow to infuse overnight. Strain and consume (Gladster 2012 p. 30, 127).
- Drink ½ cup to 1 cup, 2-3 times daily, or as needed (Gladster 2012 p. 127).

Chicory Coffee

Chicory roots are harvested in autumn and allowed to dry and become brittle. Coffee is made by grinding them and lightly roasting to use in the same way as ground coffee (Daisley 1989 p. 76).

Scrub chicory roots with a rough brush while submerged in water to remove soil then pat dry. Finely slice the roots. Lay out the individual slices on a baking tray and place in an oven preheated to 180°C/350°F for two hours. Check regularly to ensure they are not burning. Turn the oven off and allow to cool. Store in an airtight container and grind as needed (Simmonds, Howes & Irving 2016 p. 57).



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Chicory Salad

Chicory leaves can be used alone or alongside other salad greens. Remove cone shaped section at the base of the heart (head) then steam or boil in water that just covers them for approximately 10 minutes. Add lemon juice to the water to enhance flavour and serve with a creamy butter or cheese sauce (Daisley 1989 p. 76).

Dorothy Hall's 'Chicory with Cheese and Bacon'

Ingredients:

- "1 lb. chicory
- 1 tablespoon lemon juice
- 1 ½ tablespoons butter
- 2 tablespoons flour
- ½ pint cooking liquor plus milk
- Salt and pepper
- 2 oz. grated cheese
- 4 tablespoons breadcrumbs
- 4 rashers of bacon, lightly cooked (Hall 1978, p. 87)."

Method:

- Chicory should be boiled after washing, in a small amount of water and lemon juice.
- Drain the liquor and put aside
- Stir the flour into melted butter, off the heat stir in liquor with the milk
- Once boiled stir for a few minutes



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- Add salt and pepper to taste
- Add grated cheese, continue to stir until cheese is melting
- Now place the chicory in layers with bacon rashers and then the sauce in an oven safe dish.
- Cover the top with breadcrumbs, add a small chunk of butter, and bake until heated through and golden brown for approximately 20 minutes (Hall 1978, p. 87).

Dorothy Hall's Boiled or Steamed Chicory

“Prepare the hearts, as above. Cook in a stainless-steel saucepan if possible, and add just a little water and a few drops of lemon juice. Steam gently for about 10 minutes. Do not overcook. Wash and trim the chicory. Melt 2 oz. butter in a heavy saucepan (stainless-steel if possible), add 1 ½ lb. prepared chicory, juice of ½ a lemon and salt and pepper. Now add 3 tablespoons of water, cover, and cook gently for 30-40 minutes, or until tender. Serve with cooking liquor” (Hall 1978 p. 87).

History/ stories:

• **Traditional**

Chicory has been used as an herbal medicine since 1550 BC. However, today it is considered more commonly as a food source (Fisher 2009 p. 36).

Historically the Europeans learnt from the Asiatics to add Chicory root to the coffee to support gallbladder action (Hall, 1978 p. 85). Ancient Egyptians grew it for medicinal uses (Street et al. 2013 p. 2).

In Turkey, chicory was traditionally used to treat stomach pain (Fisher 2009 p. 36) and ointments were made from the leaves to heal wounds (Street et al. 2013 p. 2, Sezik et al. 2001 p. 114).



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Chicory

Cichorium intybus

India and Peru have traditionally used chicory for the treatment of gastrointestinal infections (Fisher 2009 p. 36).

The East German Mischkaffee (mixed coffee) combined chicory, sugar beet and rye during the “East German coffee crisis” of 1976-1979 (Atlas of Living Australia n.d).

During times of economic crises, such as the 1930’s Great Depression and World War II in Europe, Chicory was more commonly used than today (Atlas of Living Australia n.d).

The stems, leaves and roots of the Chicory plant have been used as a tea in Africa to treat jaundice (Saeed et al. 2017 p. 355). Chicory juice has been used as a folk remedy for uterine cancer (Street et al. 2013 p. 2, Saeed et al. 2017 p. 355) and to treat malaria (Saeed et al. 2017 p. 355).

In prisons in the USA, chicory root is used as a coffee substitution (Atlas of Living Australia n.d).

Dorothy Hall recalls that “Chicory was one of the plants included in the floral clock planted by Linnaeus, that great botanist and zoologist, on which the hours were marked by different plants’ opening and closing times.” Hall goes on to say, “the leaves of chicory always align themselves towards the north, and those interested in theosophy and metaphysics attribute great life-giving forces to the plant” (Hall 1978 p. 86).

Beer brewers have used roasted chicory in stouts to increase flavour and in Belgian ales to intensify the hops, creating witlofbier, which is the Danish name for Chicory (Atlas of Living Australia n.d).

In Europe and more specifically Belgium, young roots are boiled and consumed with butter (Grieves 1992 p. 197).



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Chicory

Cichorium intybus

German legend has it that Chicory was once a stunning princess who was abandoned by or had lost her lover and requested to be transformed into the plant (Himalya Wellness, 2020).

In European folklore Chicory was thought to possess powers to open locked doors (Atlas of Living Australia n.d, Howard 1987 p. 120).

Traditionally chicory was used to treat digestive disorders such as anorexia, bloating, flatulence and poor digestion (European Medicines Agency, 2013 p. 2).

• Horticultural

Chicory grows well in most soils. In the UK it grows wild in lime-rich areas and may grow to 2m (6 ½ ft) in height and 50cm (20 inches) wide (Simmonds, Howes & Irving 2016 p. 56). Roots should be dug up once the plant has ceased flowering (Simmonds, Howes & Irving 2016 p. 56).

Chicory seeds should be planted in nitrogen rich soil in spring, 15-20cm wide, positioned in full sun (Mitchell & Lynch 1985 p. 10-11). It can be harvested by removing the plant from the roots in late autumn. It should then be stored in dry sand or be dried via roasting (Mitchell & Lynch 1985 p. 11). Chicory is thought to separate clay soil (Mitchell & Lynch 1985 p. 26).

The young plant is easily transplanted and the roots can be harvested in autumn, in its second or subsequent years (Fisher 2009 p. 36).

When growing Chicory as a vegetable, Hall recommends to dig a 6-8 inch deep trench and mix in food and humus in the base of the trench. Then space out apart by 12 inches. Once a dozen or so



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Chicory

Cichorium intybus

leaves have appeared, build up the soil around the base of each plant by 5-6 inches to ground level. This removes the leaves bitter taste (Hall, 1978 p. 86).

Chicory was grown as a vegetable crop by Greeks and Romans 4000 years ago (Street et al. 2013 p. 8). It is considered a major source of inulin due to its strong root yield and sugar content (Street et al. 2013 p. 8).

• Evidence based

Olsen et al. (2010) conducted a phase 1, placebo-controlled, double-blind, dose-escalating trial, to determine the safety of chicory root in hip or knee osteoarthritis (OA) (Olsen et al. 2010 p. 1-7, Street et al. 2013 p. 7-8). Forty participants, aged 50 years and over, with an average age of 63 years, mostly female, with hip or knee OA were included in the study and split between 3 cohorts. Cohorts 1 and 2, included 8 subjects and had a ratio of treatment to placebo of 5:3. Cohort 3, with 24 patients, had a ratio of 16:8. Subjects were given chicory in escalating doses beginning with 600mg/d, 1200mg/d and 1800mg/d for a duration of 1 month. Safety was assessed via monitoring of vital signs and lab testing at baseline and cessation of treatment. Baseline and end of treatment effectiveness evaluations were conducted using self-assessment questionnaires such as WOMAC brief pain inventory, Modified Health Assessment Questionnaire (MHAQ) and the Visual Analogue Scale for arthritis pain assessment (VAS). A change in a 25-foot walking time was also assessed (Olsen et al. 2010 p. 1-3).

Limitations included short treatment duration, mixed population of subjects with OA and the use of per-protocol population instead of intention to treat (ITT) design. One subject in both cohort 1 and 2, assigned to chicory, and 5 in cohort 3, three assigned to placebo and two to chicory, were allowed “rescue analgesics” during the study. Two patients in cohort 1, assigned to placebo and two in



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Chicory

Cichorium intybus

cohort 2, one assigned placebo and one chicory were allowed hydrocodone or codeine with acetaminophen (Olsen et al. 2010 p. 3).

This pilot study concluded that chicory had a potential role in OA management as a single therapy or in combination with low dose NSAIDs and requested further investigation in a study that included a longer duration of treatment (Olsen et al. 2010 p. 1, 3-7).

Schumacher et al. (2011) also conducted a pilot study to determine if the polyphenol effects of chicory coffee intake lead to cardiovascular benefits (Schumacher et al. 2011 p. 744, Street et al. 2013 p. 8). Twenty seven healthy subjects, 13 women and 14 men with an average age of 23 years, consumed 300mL/d of chicory coffee, each morning for a period of one week. Five subjects were smokers and 17 were regular coffee drinkers (Schumacher et al. 2011 p. 744-745). Subjects were banned from drinking Arabic coffee or tea 1 week prior and throughout the study period due to caffeic acid content. Alcohol, vitamins and drugs were also banned for the same duration (Schumacher et al. 2011 p. 744-745). Blood samples were taken during fasting on day one, just prior to, and 2 hours post the initial coffee intake, then again on day 8 following the treatment period (Schumacher et al. 2011 p. 745).

Variable effects on platelet aggregation were observed. Whole blood and plasma viscosity and serum macrophage migration inhibitory factor (MIF) levels had reduced significantly and significant improvements were observed in deformity of red blood cells at the end of treatment, with no side effects reported (Schumacher et al. 2011 p. 744, 747, Street et al. 2013 p. 8). The range of phenolics, including caffeic acid, were thought to be responsible for these effects (Schumacher et al. 2011 p. 746-747, Street et al. 2013 p. 8). This study has established an initial view to articulate antithrombotic and anti-inflammatory actions of the phenolic constituents in chicory coffee (Schumacher et al. 2011 p. 747, Street et al. 2013 p. 8). However, both studies, Olsen et al. (2010) and Schumacher et al. (2011) (Olsen et al. 2010 p. 1-7, Schumacher et al. 2011 p.744-748) provide



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Cichorium intybus

insufficient evidence to support chicory root's use in these conditions and further studies in humans are required (Street et al. 2013 p. 7).

Watson et al. (2019), conducted two randomised, double-blind, placebo-controlled crossover trials to determine effects from chicory inulin on the stool frequency of adults, aged 40-75 years, with uncomfortable low stool frequency or no bowel motions for 2-4 days in a week (Watson et al. 2019 p. 688-698). Trial A, conducted in Amsterdam (Netherlands) included 10 participants. Trial B, conducted in Newcastle (UK) involved 20 participants. Both trials were for 5 weeks duration with a dose of 10g per day of inulin or placebo. A two week washout period was used before a cross over to alternate treatment (Watson et al. 2019 p. 688-698).

In Trial A, stool frequency increased significantly to an average of 4.9 times per week in the chicory group, compared to 3.6 in the placebo group ($p = 0.01$). However, Trial B found no significant effect on stool frequency (Watson et al. 2019 p. 692-695). Secondary outcomes in stool consistency revealed significantly softer stools with inulin compared to placebo ($p = 0.008$) when data from both trials were combined. This study concluded that chicory inulin at a dose of 10g/d can increase stool frequency (Watson et al. 2019 p. 688-698).



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Chicory

Cichorium intybus



(Chicory_Jessica Caven 2020)



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Chicory

Cichorium intybus



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Monograph Compiled by Jessica Cave dotnaturopathicdispensary.com.au



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Chicory

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HERBAL MONOGRAPH

Cleavers

Galium aparine



Cleavers images by Rachel Canaway

Season: Harvest from Spring to Autumn

Latin Name: *Galium aparine* (Plant family Rubiaceae)

Common Name: Cleavers

Other names: Clivers, Bedstraw, Goosegrass, Stickyweed. Other common names relate to its clinging, sticky nature, including: Catchweed, Sticky Bob, Sticky Willy, Velcro plant (look at references (1, 2) for other common names).

Pointers on identification: Cleavers are an annual herb that clings (cleaves) to other plants or passing persons or animals. It has a bland smell and its sticky green stems are soft, numerous, freely branched, squared (rather than rounded) and often straggly. In good conditions the stems can grow up to 120cm long. The stems, leaves and fruit have hair-like bristles or prickles that attach the plant and seeds to clothing and animals. The plant can form dense, tangled mats that sprawl on the ground or grow up through other vegetation. The narrow slender leaves (20-60mm



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Cleavers

Galium aparine

long, 3-8mm wide) grow in whorls of usually 5 to 8 leaves at intervals along the stem. The tiny flowers (about 2-3mm diameter) have four petals and are white or greenish-white. The fruits (see capsules) are green or greyish-brown oval shaped with hooked bristles (1, 3, 4).

Common misidentification. What to look for to ensure you have the correct species: There are numerous species of Galium around the world commonly known as bedstraw or cleavers, all are low growing, some annual and some perennial. Many of the species share the sticky quality of the tiny prickles and the long, slender leaves in whorls of 4-8 on square or rounded stems. Studies show little variation in traits between some species (5) many of which have recorded medicinal uses (2). Many Rubiaceae family plants are highly regarded as food or medicine (2). Misidentification of *Galium aparine* with a Galium species is not dangerous. If you touch a plant thinking it might be cleavers and it is not sticky and does not cling to you, then it is not cleavers. *Galium aparine* is very common.

Where you find it (geography): REGION OF AUST

In Australia you will commonly find cleavers in Victoria, Tasmania, New South Wales and South Australia. It is common in temperate environments across all continents, and in higher altitudes in the sub-tropics. Cleavers are a fast growing, early coloniser of waste ground, roadsides, and other disturbed sites. They can be found in home gardens and can be a major agricultural weed.

Growing conditions: Cleavers will grow in a wide range of situations, but thrives in moist, shady areas and is abundant in springtime.

Safe usage pointers (contra indications): If touching the plant causes a skin rash it may be best not to ingest it. As with all wild harvested weeds and herbs, be sure to gather specimens that have not been sprayed with weed killers.

Energetics: Cold, slightly dry and salty (8).



HERBAL MONOGRAPH

Cleavers

Galium aparine

Actions: Regarded to be a nourishing, tonifying, detoxifying springtime tonic (6). Diuretic, mildly astringent, anti-inflammatory, 'lymphatic cleanser' (improve lymphatic function) (7, 8).

If medicinal – Uses: Traditionally used for psoriasis, eczema and other dry skin conditions, enlarged lymph nodes or glands, cystitis, bladder/kidney stones, oedema, pre-menstrual breast tenderness, ulcerated skin and tumours (4, 6, 7, 9).

Indications: Dose: Interactions: For topical and internal use. Any of the following can be had three times daily: expressed juice 3-15ml; dried herb 2-4g by infusion; liquid extract (succus) 1:1 in 25% alcohol, dose 2-4ml (4). Mrs Grieve recommends that 3oz (approximately 90ml) of the juice be taken twice daily, but not at such high dose "if a tendency to diabetes is manifested" (2). Cleavers has centuries of recorded traditional use as food and medicine. No interactions are noted.

If edible - Uses - recipes eg. Fresh, expressed juice is one of the best ways to take cleavers. The fresh or dried herb can be taken as a hot or cold infusion; the hot infusion has sometimes been used as a substitute for tea. The dried and slightly roasted seeds make a good coffee substitute (coffee is also from the Rubiaceae family) (2, 3).

Herbal Recipes

Recipe: Juice and succus (the juice of a herb stabilised/preserved with alcohol). Extract the juice using a slow juicer such as a Champion juicer (chop it into pieces first so that the fibres don't wrap around the blade. Alternatively, chop the herbs into 5cm lengths then blend with a food processor with about a tablespoon of water to reduce to a "pulpy mash", then bundle into a muslin cloth placed in a mesh strainer over a mixing bowl. Put something heavy onto the bundle and leave for about an hour to strain, then squeeze the bundle to extract the last of the juice. A small amount of the juice (10-50ml per day) can be diluted and taken over the day. Preserve the remainder of the



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Cleavers

Galium aparine

undiluted, expressed juice by adding an equal amount of vodka. The resulting 'succus' can be bottled in a clean, amber jar and taken 2-4 mls three times daily, lasting for about a year (10). See other preparation instructions and recipes at The Herbal Academy website – including a Cleavers infused oil for therapeutic topical use and a cold infusion (10).

Recipe: Hot infusion: 2-3 tsp dried herb infused in boiling water [lid on] for 10-15 minutes.

Recipe: Vegetable: The fresh young leaves can be steamed (like spinach) and served with butter. Various sources refer to cleavers as an 'excellent vegetable (6-8).

History / stories

• Traditional

Cleavers has long been considered a valuable detoxifying herb, a tonic to the lymphatic system, a 'blood purifier' and springtime tonic (2, 7-9). In his 1597 herbal, John Gerard, apparently quoting Pliny (1st century AD), wrote of cleavers in that "a pottage made of cleavers a little mutton and oatmeal is good to cause lankness and keepe from fatnesse" (2).

Mrs Grievés (1931) describes Cleavers to have "been to advantage scurvy, scrofula, psoriasis and skin diseases and eruptions generally... Its use is recommended in dropsical complaints, as it operates with considerable power upon the urinary secretion and the urinary organs. It ...(acts) as a solvent of stone in the bladder... The herb has a special curative reputation with reference to cancerous growths and allied tumours, an ointment being made from the leaves and stems wherewith to dress the ulcerated parts, the expressed juice at the same time being used internally... The infusion has a most soothing effect in cases of insomnia, and induces quiet, restful sleep... Clivers teas is still a rural remedy for cold in the head." (2)



HERBAL MONOGRAPH

Cleavers

Galium aparine

A compress made of Cleavers infusion or juice is used for sunburn, grazes and other minor skin inflammations. The infusion can also be used as a hair rinse for dandruff or other scaling scalp problems. Cleaver-containing creams or ointments have been used to relieve psoriasis and other skin conditions (8).

One of its common names, Bedstraw, is given because it has traditionally been used as a mattress filling. The sticky, clingy characteristic of the plant can minimise its compaction making for a more comfortable sleep (3). The roots can be used to make a red dye (other varieties of Galium roots are also used for this purpose) (2).

• Horticultural

Cleavers have long been considered an invasive pest that can reduce or contaminate crops (1, 3). Its common name Goosegrass is in reference to geese liking to eat this herb, as do horses, cows and sheep (2).

• Evidence based

Not much research has been carried out to study the effects of cleavers on humans. Its constituents have been studied and confirmed to have a “significant content” of antioxidants (flavonoids and hydroxycinnamic acids with a predominance of rutin and chlorogenic acid) (11) and “significant immunostimulatory and scavenging activities” (properties of antioxidants) (12). Researchers have said: “The obtained data partially justifying the traditional use of cleavers as topical remedy for skin infections and for wounds” (12). Turkish lab-based studies (not human studies) have detected potential anti-cancer effects. More studies are needed to test these effects in humans (13, 14).

Monograph Compiled by Rachel Canaway



HERBAL MONOGRAPH

Cleavers

Galium aparine

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HERBAL MONOGRAPH

Dandelion

Taraxacum officinale



Wikipedia. (2020). Dandelion [image]. Retrieved from https://en.m.wikipedia.org/wiki/File:Wild_bee_on_dandelion.jpg

Season: This perennial herb root is best harvested in late autumn to early spring for maximum stored nutrients. Spring & early summer is best harvest time for flowers & leaves (5).

Latin Name: *Taraxacum officinale*

Common Name: Dandelion

Other names: Lion's tooth, pissenlit, cankerwort, Blowball, puffball, swine snout, priest's crown, wild endive, white endive (1,3,4).

Pointers on identification: Dandelion is a hardy plant that can grow to a height of up to 12 inches. The root of the dandelion plant is an underground, long, brown, fleshy taproot which rises out of the ground to a rosette of bright green, distinct toothed leaves with a smooth and shiny appearance. The flowers are bright orange-yellow in colour and once they go to seed transform into a head of white and fluffy seedlings (6,7).



HERBAL MONOGRAPH

Dandelion

Taraxacum officinale

Common misidentification. What to look for to ensure you have the correct species:

The dandelion leaf shares similar characteristics with another common weed known as 'cat's ear' (7). They both grow in very similar environments and the flowers have only subtle differences making it difficult to distinguish one from the other just by looking at the flowers. The leaves are the best way to determine one from the other as the cat's ear has soft hairy leaves with rounded lobes while the dandelion leaves are smooth and have sharp toothed lobes that point back towards the centre of the plant (7).

Where you find it (geography): REGION OF AUST Victoria, New South Wales, South Australia, Tasmania and Western Australia

Growing conditions: Dandelion doesn't like the extremities of cold and heat but is a fairly resistant plant overall. You can grow dandelions from seed in full sun with little water however, caution should be taken if you wish to cultivate dandelion as it can take over the garden. You can find wild stocks of this plant almost anywhere in Australia. Avoid collecting from places near roads and high traffic areas due to contamination of toxins (5). The dandelion is native to the northern hemisphere but can be found in many temperate locations around the world. Medicinal products are mainly sourced from eastern Europe however, in Australia, *Taraxacum officinale* could be found in your own backyard (2).

Safe usage pointers (contra indications): As a member of the Asteracea family, it is best avoided if there is a known allergy to this plant family, as both anaphylaxis & contact dermatitis reactions have been reported. There is also evidence to support the contraindication of dandelion in cases of biliary or intestinal obstructions and acute gall bladder inflammation (3).



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Dandelion

Taraxacum officinale

Harvesting the dandelion roots: Use a large spade or a dandelion fork to remove as much of the roots as possible. Separate the roots from the stems and leaves (save the leaves for salads). Rinse the roots and cut into smaller pieces (around 10mm pieces) using a sharp knife. (See recipes in final page)

Energetics: bitter, gentle, cooling, sweet, stimulating, drying, transformative (13).

Actions (Roots): Dandelion root is indicated for use in cases of dyspepsia, to stimulate bile flow, diuresis and appetite. It can also be used to aid in digestion and as a remedy for constipation (2,4). The bitter constituents of the root are understood to cause the increased bile production and release which would assist in mild laxation to assist with constipation (1). The actions of dandelion root have been documented as bitter tonic, digestive, cholagogue, diuretic, laxative and anti-rheumatic (2).

Dose. Roots: Dry herb: 9-15g per day Liquid Extract: 20-40ml per day

Actions. (Leaves): As a diuretic, the dandelion leaves have been shown to have a stronger effect than the roots (1). The dandelion leaves also contain bitter constituents which can aid in gastrointestinal ailments such as dyspepsia, loss of appetite and sluggish digestion. The medicinal actions of the leaves have been described as similar to the root but weaker (2,4).

Dose. Leaves: Dry herb: 12-30g per day Liquid Extract: 40-80ml per day

Indications (Root & Leaves):

Dyspepsia, restoration of hepatic and biliary function, loss of appetite, bloating, flatulence, constipation, oedema, oliguria, jaundice, gallstones, chronic skin disease (14).



HERBAL MONOGRAPH

Dandelion

Taraxacum officinale

Interactions - none known.

Herbal Recipes

Dandelion Root Tea

Roasting the dandelion roots - Preheat oven to 100°C. Place dandelion roots onto a baking tray lined with baking paper. Roast for 2 – 3 hours tossing regularly to avoid burning. Roots will be ready once you can snap them in half easily and cleanly. If still bendy, they need more roasting time.

Brewing the dandelion roots - Grind the roasted roots with a coffee grinder or simply use the pieces as they are. Bring a small saucepan of water to boil and add the roots. Simmer for 20 minutes, strain using a fine sieve and serve. Add sweetener and milk as desired (11).

Dandelion Greens Salad

250g torn dandelion greens

½ red onion, thinly sliced

2 tomatoes chopped

½ teaspoon dried or fresh basil

½ teaspoon olive oil



Depositphotos. (2020). Dandelion [image]. Retrieved from <https://depositphotos.com/stock-photos/bissenlit.html> dandelion.i



HERBAL MONOGRAPH

Dandelion

Taraxacum officinale

½ teaspoon of balsamic vinegar

Salt & pepper to taste

In a medium salad bowl, toss together dandelion greens, tomatoes & onion. Season with basil, salt & pepper. In a small bowl, mix the oil & vinegar. Toss (12)

History/ stories:

The English common name 'dandelion' originated from the French expressions 'dent-de-lion' meaning Lion's teeth (4). Dandelion has a long history of culinary and medicinal use. Traditionally, dandelion leaves have been used as a diuretic and the roots as a liver tonic (1). It is likely that the French name pissenlit, which means to wet the bed, is due to its diuretic effects.

In Chinese medicine, dandelion has been used internally and externally for abscesses, eye inflammations and as a diuretic (4)

Monograph Compiled by Bec Burdette



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Dandelion

Taraxacum officinale

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HERBAL MONOGRAPH

Farmer's Friends

Bidens pilosa



Images: Heidi Merika Cobblers Pegs

Season: In many places *Bidens pilosa* grows all year round and can be harvested at any time. In some climates it prefers spring or autumn.

Latin Name: *Bidens pilosa*

Family: Asteraceae

Genus: *Bidens* - There are approx 230-240 *Bidens* species in this genus worldwide

Common Name: Cobbler's Pegs or Farmer's Friends

Other names: Spanish needles, beggars ticks, devil's needles, broom sticks, pitchforks, buzzies, bur-marigolds, stickseeds, tickseeds, tickseed sunflowers, black jack. In China they are known as xianfengcao (all bountiful grass).

Pointers on identification: Recognised by its clusters of narrow, black seeds, 1cm long and 2-3 fine barbed projections at the end of each projection, which cause it to 'stick' tenaciously to fur and



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Farmer's Friends

Bidens pilosa

clothing. Leaves are oval or lance shaped with serrated edges. Each stem ends with a group of 3 leaves. Stems can be light green, dark green or reddish in colour. Small daisy like flowers with a yellow centre. 5 to 7 delicate white petals

Common misidentification. What to look for to ensure you have the correct species: Until recently it was unclear whether *B. alba* and *B. pilosa* were the same or different species. In 2006 genetic study showed they are separate species, even though the differences are subtle and both can be used as food and medicine. *B. alba* is larger, its petals are one centimeter or longer and it has five to eight petals. The *B. pilosa* is slightly smaller with petals under a centimeter in length, usually 8 mm or less. It has four to seven petals, or none at all. They are used interchangeably.ⁱ It is also confused with *B. subalternans* (also called Farmers Friend) with yellow flowers and rays and lower leaves divided into leaflets. *B. bipinnata* (Spanish needles) which has yellow/white rays, yellow centres, and toothed leaflets, and *B. tripartita* (Bur marigold) which has yellow rays and centres often with no visible petals. All species possess medicinal constituents.ⁱⁱ

Where you find it (geography): Thought to have originated in South America they are now all over the world across temperate and tropical regions. Folkloric use has been documented in Australia, America, Africa, Asia, Oceania. It is naturalised in Australia and is common in the eastern and northern parts of Australia where it is widespread throughout Queensland, eastern New South Wales, the Northern Territory and the northern parts of Western Australia. It is less common in the ACT, Victoria and South Australia, and in south-western Australia. It is also naturalised on Lord Howe Island, Norfolk Island and Christmas Island. It is also regarded as an environmental weed in New South Wales, Queensland, Western Australia and the ACT.ⁱⁱⁱ



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Farmer's Friends

Bidens pilosa

Growing conditions: Cobbler's pegs are commonly found in gardens, parks, crops, pastures, roadsides, disturbed sites and waste areas, and also in waterways, rainforest margins, open woodlands and coastal sites (particularly in warmer regions).^{iv}

Safe usage pointers (contra indications): In areas that have soils high in silica and cadmium B. Pilosa can accumulate these compounds.^v Caution if allergic to asteracea family. Caution if on tetracyclines and blood sugar lowering medications due to potentiating effects.

Part Used: All parts of the plant have traditionally been used as ingredients in folk medicine, including the leaves, flowers, stems and roots. Fresh leaves are the most common part used.

Harvesting: This plant can be harvested throughout the year. Removing the flowers will prevent the plant from going to seed and promote leaf growth prolonging harvesting time.

Energetics: Warming and gently stimulating.^{vi}

Constituents: Flavonoids, terpenoids, phenylpropanoids, aromatics and porphyrins.

Actions: Anti-inflammatory, antioxidant, anticancer, antidiabetic and antihyperglycemic, antiallergic, immune modulating, antibiotic (both locally and systemically), antibacterial, antimalarial, antifungal, antihypertensive, vasodilatory, wound healing, antiulcerative

Medicinal - Uses *B. pilosa* is used in the treatment of inflammation, cancer and diabetes. It also possesses antibiotic potential, as it is antibacterial, antifungal and wound healing. It is both sad and ironic that we spend billions each year on the treatment of these diseases while this prolific plant is sitting right under our noses being much maligned as an 'invasive weed'.



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Bidens pilosa

Traditional Folk Medicine: Folkloric use has been documented in Australia, America, Africa, Asia, Oceania. *B. pilosa* has been reported to be useful in the treatment of over forty disorders. The main disorders being:

Gastrointestinal – Stomach-ache, colic, constipation, diarrhoea, dysentery, appendicitis, enteritis, gastritis, intestinal worms, haemorrhoids, stomach ulcers, bacterial infections in the gastrointestinal tract

Respiratory – Asthma, sore throats, colds, flu, tuberculosis, cough, earaches

Infections - Acute infectious hepatitis, conjunctivitis, renal infections, yellow fever, malaria

Female reproductive - Menstrual irregularities, period pain, morning sickness

Systemic – Cancer, diabetes, metabolic syndrome, inflammation, arthritis, hypertension

Externally – Cuts, burns, wounds, snake bites, nose bleeds. ^{vii}

Michael Moore recommends it for prolapsed and 'soggy' or inflamed tissues of the sinus, bladder and prostate. Extolling its virtue in its capacity to 'tighten, shrink and tonify mucus membranes' Stephen Harrod Buhner recommends it for both local and systemic Staphylococcus infections. ^{viii}

Indications: Dose: Interactions known: Infusions: Michael Moore recommends cold or standard infusion ¼ cup (60 mls) – ½ cup (125mls) three to four times a day. ^{ix} Stephen Harrod Buhner recommends 1 teaspoon dried herb in 1 cup water, steeped for 15 min and drunk 3-4 times daily. ^x

Tincture: Michael Moore recommends Tincture (Fresh, 1:2, Dry, 1:5, 50% alcohol) 45-90 drops. Three times daily (Moore, 1995) ^{xi} Stephen Harrod Buhner suggests either a fresh plant alcohol tincture or the fresh juice are the strongest. He suggests a fresh plant tincture made to a 1:2 in



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Farmer's Friends

Bidens pilosa

95% alcohol using 45-90 drops (2.5 – 5mls) in water 4 times daily. If using dried plant do a 1:5 at 50% alcohol at a dose of 7-20mls For acute infections he recommends ¼- 1 tsp and up to 1 tblspn in water 6 times daily for up to 28 days. ^{xii}

Fresh Juice The fresh juice can be used in similar doses to the tincture and can be preserved with 20% alcohol. The fresh juice can be used both internally and externally.

Drug Interactions: Few drug reactions have been recorded, however caution is recommended with tetracyclines as it may have a potentiating effect. Those on diabetic medication should be aware of its effect in lowering blood sugar levels. ^{xiii}

Nutrients: Very high in Protein, calcium, and beta-carotene, also a good source of vitamin C, iron, potassium and magnesium. ^{xiv}

If edible - Uses - recipes. It can be eaten Raw in salads, cooked as a green vegetable, dried and stored for future use, made into a tea. It is an unpopular weed in Australia, but worldwide it is a common wild food. It is an incredibly high source of plant protein. The African government introduced it as a staple food crop due to its ease of cultivation and high protein content. Raw leaves contain an incredible 24.5g of protein per 100g. Most plants have between 1- 6g. ^{xv} It is also eaten in Mexico and the tea drunk in China and by the Texan Indians. In the Phillipines leaves and flowers are fermented into wine. ^{xvi} Some caution is recommended against over consumption or using it as a staple in the diet as regular consumption has been linked to oesophageal cancer due to the silica hair on the leaves ^{xvii} Casual consumption has no negative effects and is likely to reduce cancer risk.



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Farmer's Friends

Bidens pilosa

History/ stories:

Evidence based

Scientific studies on *Bidens pilosa* have been done in the following areas. Most of these studies have been done on mice or cell lines. The positive results of the studies warrant further research on human subjects.

Anticancer: *B. pilosa* contains compounds that have demonstrated toxicity against human oral, liver, colon, breast,^{xxviii} lung^{xxix} and skin cancers.^{xx} *B. pilosa* demonstrated positive antileukaemic effects on leukaemic cell lines.^{xxi} Several flavonoids have been identified in *B. pilosa* as having anti-cancer effects. The compound luteolin found in *B. pilosa* has been shown to inhibit cancer cell adhesion and invasion in skin cancer inhibition trials and other studies.^{xxii}

The flavonoid butein was identified as being able to prevent proliferation of human colon cancer cells.^{xxiii} The flavonoid centaureidin also produced anti-cancer activity in B lymphoma cells.^{xxiv} In addition to the flavonoids, other compounds such as polyynes have demonstrated anti-tumour activity. Two polyneaglycones have been shown to be toxic to cancer cells and inhibit tumour cell growth.^{xxv}

Antidiabetic and antihyperglycaemic: *B. pilosa* is used as an anti-diabetic herb in America, Africa and Asia.^{xxvi} *B. pilosa* was able to prevent auto-immune, type 1 diabetes in non-obese diabetic mice.^{xxvii} Ethanol extracts of *B. pilosa* are able to lower blood glucose in mice with type 2 diabetes.^{xxviii} Water extracts or infusions of *B. pilosa* have demonstrated the ability to suppress appetite, reduce blood glucose, increase blood insulin, improve glucose tolerance, and reduce glycosylated haemoglobin (HbA1c). It appears to be effective in both short and long term treatment.^{xxix}



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Farmer's Friends

Bidens pilosa

Anti-inflammatory: A 1999 study by Pereira suggests the immunosuppressive activity of *B. pilosa* may explain its anti-inflammatory effect.^{xxx}

Antiallergic: There have been a number of trials demonstrating the anti-allergic effect of *B. pilosa*, which are caused by its immune modulating effects.^{xxxii}

Immune modulating: The immune modulating effects of *B. pilosa* are numerous and support its use in cancer, inflammation, allergies and impaired immunity.^{xxxii}

Antioxidant: The antioxidant effect of *B. pilosa* has been demonstrated in a number of trials, and this, along with its immunomodulation effects, support its use in common chronic inflammatory diseases such as cancer, heart disease and diabetes.^{xxxiii}

Antimalarial: Antimalarial effects have been demonstrated in two 2009 studies.^{xxxiv}

Antibacterial: *B. pilosa* has an extensive history of use as an antibacterial agent. This use is supported by numerous studies.^{xxxv}

Antifungal: Its use as an antifungal agent is also supported by several studies.^{xxxvi}

Antihypertensive, vasodilatory: Results from rat studies suggest that *B. pilosa* exerts its cardiac effects by acting on cardiac pump efficiency and vasodilation.^{xxxvii}

Wound healing: Rat studies have supported the external use of *B. pilosa* by demonstrating that epithelialisation and total healing time for *B. pilosa* is comparable to neomycin sulphate.^{xxxviii}

Antiulcerative: Studies suggest that *B. pilosa* protects the stomach against its own peptic acid secretions by reinforcement of gastric resistances.^{xxxix}



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Farmer's Friends

Bidens pilosa

Horticultural:

This plant possesses alleopathic properties, which means it produces biochemical that influence the germination, growth, survival, and reproduction of other plants. It can also be a host to nematodes and viruses. Control can be difficult due to profuse highly viable seeds which stick to fur and clothes spreading seeds. Normal tilling of soil is not effective as a control method as they tend to come back in even greater numbers. This can reduce domesticated crop growth significantly. Proliferation can be minimised by mowing, pulling or cultivation. I recommend pulling and using the plants for tincture or drying and grinding to use as a protein powder. Can indicate soils are low in calcium and phosphate and high in potassium, magnesium and manganese.^{xi} In areas that have soils high in silica and cadmium B. Pilosa can accumulate these compounds.^{xii}



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Farmer's Friends

Bidens pilosa



Image: Cobblers Pegs by Heidi Merika

Monograph Compiled by Heidi Merika - heidimerika.com.au/



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Farmer's Friends

Bidens pilosa

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HERBAL MONOGRAPH

Farmer's Friends

Bidens pilosa

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HERBAL MONOGRAPH

Wild Fennel

Foeniculum vulgare



Wild Fennel images: left and right images by Lynn Greyling; centre image by Kristel Rae Barton

Other names: Saunf (Urdu / Punjabi / Hindi / Unani), Satupusa (Sanskrit), Badyan (Persian), Uiko (Japanese).

Identification pointers: Fennel is an umbelliferous herb, with small yellow flowers (no sepals, narrowing tips) clustered in groups of 20 to 50 into large (5 to 15 centimetre) umbrella like groups (umbels) and feathery leaves. It is an erect evergreen which grows to a height of up to 2.5 metres.

Common misidentification: Wild fennel differs from cultivated fennel (also known as Florence fennel or finocchio) which is characterised by a large edible bulb and almost flavourless greens. Wild fennel by contrast has little or no bulb but instead an edible taproot & aromatic leaves, flowers & seeds. Although they are the same plant, it is the growing conditions that has led to their differences.

Be careful not to confuse wild fennel with *Conium maculatum* (hemlock / carrot fern) which is found over most of Victoria in moist, disturbed and neglected soils. All parts of hemlock are toxic to eat, and it may also be a strong external irritant. Wild fennel and hemlock can often be found growing in the same area. The smell is the most distinctive difference between the two (hemlock = musty, wild fennel = sweet and aniseed like).



HERBAL MONOGRAPH

Wild Fennel

Foeniculum vulgare

Distinction between fennel & hemlock:

	HEMLOCK	WILD FENNEL
FLOWER	White - greenish white	Yellow
STEMS	Hairless. Purple/red blotching	Polished, blue/green
SEEDS	Dark grey to brown. Globular with 5 prominent wavy ridges	Green/brown. Oblong. ribbed & dorsally compressed
LEAVES	Look like carrot tops	Fine & feathery
SMELL	Crushed leaves smell musty	Leaves & seeds smell sweet and like anise

Source: www.agriculture.vic.gov.au

Where it grows: Wild fennel is considered to be indigenous to the shores of the Mediterranean (12) and has followed the movement of people from that area (5). It is an old-world plant that now grows in warm climates across the world (4).

In Australia, wild fennel is widespread. It is naturalised across the coastal and sub-coastal districts of the southern and south-eastern areas of Australia and is particularly common in Victoria, eastern New South Wales, the ACT, Tasmania, south-eastern South Australia, and south-eastern Western Australia. Wild fennel is less common but still present in eastern South Australia, inland northern New South Wales, south-eastern Queensland and Norfolk Island.

Growing conditions: Wild fennel likes wild, neglected & disturbed areas; i.e. rocky shores, riverbanks, waste land, roadsides, pastures, by train tracks, footpath cracks (12). Also found in dry & stony soils. Generally unfussy. Sometimes called asphalt fennel because of its propensity to grow by the side of the road and in cracks of old paths.

Energetics: Warming, dry, pungent and sweet (8, 11).



HERBAL MONOGRAPH

Wild Fennel

Foeniculum vulgare

Safety: Allergic reactions to wild fennel are rare but possible. It is generally considered to be safe (2, 9, 11). The seeds and liquid extract contain volatile oil which shouldn't be consumed in extremely high doses by people with liver problems (2). Beneficial and considered safe during lactation as a galactagogue (2). Limit intake to standard culinary amounts in cooking and as an infusion during pregnancy as fennel in large therapeutic doses is a mild uterine stimulant (1). Infusions contain less volatile oil than extracts and no adverse effects are expected using infusions during pregnancy (1).

Parts used: The feathery leaves and stalks can be cooked until tender and eaten in the same way that you would spinach or kale (14). The seeds can be used in cooking and infusions (13). Use the flowers in baking or salads. The immature green seeds are lovely to nibble on (15). Use the flowers when vibrant in colour and not dried and gray (12). The pollen is a delicacy that can be collected by gathering flowers on a stem and placing upside in a clean paper bag. Allow to hang in a cool, dry area for two to three weeks and then shake vigorously. Discard the flowers and stems. The pollen can be used as a flavouring on roast meat and vegetables, salads, popcorn, eggs, pizza, pasta, baking and in hot drinks (12). The taproot can be cooked as you would carrot. Seeds are best harvested late winter / early spring through to late summer; flowers and pollen are best harvested spring and summer. Because wild fennel is so widespread and invasive, it is a wild plant that can be generously harvested (15).

Actions: Anti-emetic, aromatic, carminative, antispasmodic, galactagogue, diaphoretic, diuretic, expectorant, anti-inflammatory; anti-microbial (3, 11).

Uses: For poor digestion, digestive spasms, menstrual cramps, infantile colic, insufficient lactation, irritable bowel syndrome (3, 11). Also, topically for inflammatory external eye conditions such as conjunctivitis and blepharitis (3, 11). It can also be used to make the taste of other herbal medicines more palatable.

Dose: To make an infusion add a cup of boiling water to 1 to 2 teaspoons lightly crushed seeds and let sit for 10 minutes. Drink a cup of this infusion three times day (7). Take 3 to 6ml of 1:2 liquid extract per day (1). Externally (as an eyewash, eye compress or throat gargle), using a strong decoction or infusion.



HERBAL MONOGRAPH

Wild Fennel

Foeniculum vulgare

Traditional knowledge: **Hildegard von Bingen** (circa 1155) says, “In whatever way it is eaten, it makes a person happy, and brings to him a gentle heat and good perspiration, and makes his digestion good”, and also, “eating fennel or its seed every day diminishes bad phlegm and decaying matter, keeps bad breath in check, and makes one’s eyes see clearly”, (10).

Mrs Grievess (1932) says: “Fennel was well known to the Ancients and was cultivated by the ancient Romans for its aromatic fruits (seeds) and succulent, edible shoots. Pliny had much faith in its medicinal properties, according no less than twenty-two remedies to it.” (5)

A savoury odour blown,
Grateful to appetite, more pleased my sense
Than smell of sweetest Fennel.
Milton, *‘Paradise Lost’*.

Dorothy Hall (1972) says: Fennel “has a definitive action in predigesting and breaking down oily and fatty food stuffs in the diet”, and “owes most of its properties to its slimming qualities”. Roman women “drank fennel tea and used it when cooking fatty food...to keep their waistlines trim and their figures supple and healthy”. Another use is in eye afflictions – to strengthen and restore sight –as a topical remedy (by making a strong decoction and using as a compress when cooled). (6)

Horticultural information: The flowers are beneficial insect attractors (15) and so fennel is a useful plant in the garden. However, they can have an adverse effect on the growth of nearby plants (such as vegetables) so best kept as a loner (9). It grows well from seed and usually self sows prolifically (Fisher & Painter, 1996).

Scientific knowledge: The seed is the most commonly used part of the plant for medicinal purposes (2). Clinical trials have supported its use for irritable bowel syndrome, and to alleviate dyspeptic conditions of the upper gastrointestinal tract (e.g. pain, burping, nausea and heartburn), chronic constipation and coughs (2).



HERBAL MONOGRAPH

Wild Fennel

Foeniculum vulgare

Roasted Roots with Fennel: Recipe adapted (4)

Ingredients: 6 cups of any root vegetables (e.g. parsnip, beets, carrot) cut into 2cm cubes, 1 bulb of garlic split into cloves (skin can be left on), 1 teaspoon fennel seeds, salt and pepper to taste, 1/4 cup olive oil, 2 tablespoons balsamic vinegar.

Method: i) Preheat oven to 180 degrees celsius. ii) Combine all ingredients into a baking pan and stir to combine. Pan should be large enough for vegetables to be single layered. iii) Bake for approximately one hour or until vegetables are tender. iv) Remove from the oven and serve as a side dish or allow to cool slightly and serve tossed through baby spinach leaves and shaved parmesan as a salad. Consume within three days.

Wild fennel fronds with breadcrumbs: Recipe adapted (16)

Ingredients: 700g wild fennel fronds, 1 teaspoon olive oil, 1 teaspoon salt, ½ teaspoon pepper, bread crumb mixture (1/2 cup fresh bread crumbs, 2 tablespoons parmesan, 2 finely chopped garlic cloves, ¼ cup finely chopped flat leaf parsley, salt and pepper to taste).

Method: i) Thoroughly combine bread crumb ingredients. ii) Gently wash the fennel fronds. iii) Fill a large pot with water and bring to the boil. Add fronds and cook for 15 – 20 minutes until wilted. Drain, dry and allow to cool (this can be done up to 48 hours prior). iv) Combine the fronds and bread crumb mix. v) Warm a frying pan or BBQ plate and heat. Distribute the crumb coated fronds and allow them to crisp on one side before flipping over and crisping the other side.

Monograph Compiled by Kim Graham www.thegreenowl.com.au



HERBAL MONOGRAPH

Wild Fennel

Foeniculum vulgare

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HERBAL MONOGRAPH

Gotu Kola

Centella asiatica



Centella asiatica by Helene de Joux

Latin Name: *Centella asiatica*

Common Name: Gotu Kola

Other names: Indian pennywort, Asian pennywort, Brahmi

Pointers on identification: Gotu Kola is a frost tender, prostrate, slender, herbaceous creeping perennial growing to 0.2m high. The leaf is kidney shaped, 1 to 7cm in diameter. The stems are green and slender with some reddish colour at the base; roots are found at the leaf nodes. It flowers in the late summer, early autumn and the seeds can be found in autumn early winter, depending on the climate. *Centella asiatica*'s flowers are so inconspicuous they are often not noticed at all - the inflorescences are close to the base of the plant and appear in minute pink clusters of two to four. The taste is herbaceous and mildly bittersweet (5).



HERBAL MONOGRAPH

Gotu Kola

Centella asiatica

Common misidentification. What to look for to ensure you have the correct species: Three closely related species of *Centella spp.* grow in Australia: *Centella asiatica*, *Centella cordifolia* and *Centella erecta*. *C. cordifolia* is an Australian native species, and *C. erecta* is a native of South America as well as subtropical and tropical parts of North America. It was introduced in Australia through nurseries. These 3 species can be difficult to differentiate, however *C. asiatica* has indistinctly dentate leaves and stoloniferous habit, that is, growing via runners, not unlike some strawberries. The stolons are usually white or light green, often with a reddish tinge. The other *Centella spp.* have serrate leaves, and a tufted growth habit (5).

Kidney Weed (*Dichondra repens*) is also commonly mistaken for *Centella asiatica*. They often grow in the same area of the garden and it is also a creeping perennial weed. *Dichondra* leaves are reniform (kidney-shaped), and their margin is neither serrated nor dentated like *Centella spp.*, however the apex of their leaves can be notched. It produces inconspicuous white star-shaped flowers (10).

When it does not bear its typical lavender and white violet flower, Native Violet (*Viola hederacea*) is another common misidentification. Their leaves tend to overlap near the stem and the stolons and base of the petioles are not pinkish-red. The leaves are crenate, and the stems can be glabrous (hair-free) to densely hairy (11).

As it shares the common name Gotu Kola with *Bacopa monnieri*, it can sometimes be confused for this plant, but it does not resemble it botanically. Similarly, it shares the common name Pennywort with *Hydrocotyle sibthorpioides*, it can also be confused with this plant, however, the leaves are much wider, thicker and scalloped, and its flowers are yellow white on stalks higher than the leaves (12).



HERBAL MONOGRAPH

Gotu Kola

Centella asiatica

Where you find it: Gotu Kola is a native of Eastern Asia, India, Sri Lanka, China, and Malaysia, but now has naturalised in many parts of the world, including Australia.

Growing conditions: Gotu kola grows in full to partial sunlight and moist to wet, fertile soils, in home gardens, pastures and swampy areas.

Safe usage pointers (contra indications): Gotu Kola is a herb rich in saponins, and its oral use may cause gastric irritation and reflux in some people. It is considered to be a weak allergen after some case reports of contact dermatitis. It is generally considered safe and is often used as a leafy green in the cooking of many countries (3,8)

Energetics: bitter, cold (6).

Actions Vulnerary, anti-inflammatory, depurative, adaptogenic, nervine tonic, anti-rheumatic, vasodilator (2,6)

Dose: 3-6ml/day of a 1:2 liquid extract or equivalent (2)

To make an infusion, use 2-3 gr of dried herbs or 4-6 gr of fresh herbs in 125ml of freshly boiled water and let sit for 10mn. Drink 500ml per day (6)

Herbal Recipes: Sri Lankan Gotu Kola Mallum

Ingredients

- 200g greens, washed and dried (5-6 leaves)
- 2 tbsp. oil
- 1/2 red onion finely chopped
- 1 sprig curry leaves
- 1 tsp. mustard seeds
- 1/2 tsp. maldive fish (optional)



HERBAL MONOGRAPH

Gotu Kola

Centella asiatica

- 2 dried chillies finely sliced
- 1/4 cup shredded coconut
- 1/2 tsp. turmeric
- salt to taste

Preparation

Finely slice the greens. Cut the leaves to a fine shred.

In a frypan add the oil. When hot, fry until the onion is soft. Add the curry leaves, mustard seeds and fry until the mustard seeds pop and the curry leaves release their aroma.

Add the chopped greens and cook until just wilted. Add the coconut, turmeric and salt, Mix well until just warmed through.

Serve warm as an accompaniment to curries and red rice.

History/ stories:

• **Traditional** A valuable medicine for its diuretic properties; has long been used in India as an aperient or alterative tonic, useful in fever and bowel complaints and a noted remedy for leprosy, rheumatism and ichthyosis; employed as a poultice for syphilitic ulcers. In small doses it acts as a stimulant, in large doses as a narcotic, causing stupor and headache and with some people vertigo and coma (7).

• **TCM** "Bitter, acrid, and cold, Centellae Herba (*ji xu; cdo*) enters the Liver, Spleen, and Kidney channels to clear heat, facilitate the removal of dampness, reduce swelling, and resolve toxicity. It is used in the treatment of summer heat diarrhea, dysenteric disorder, damp-heat jaundice, gravelly or painful bloody urinary dribbling, vomiting, nosebleeds, red eyes, swelling of the throat, wind rash, scabies, dermatosis, swollen toxic sores, and deep-set noxious sores. It has a long history of external application for resolving toxicity. For example, the *Tang Materia Medica* instructs: "pound, then apply to hot swellings and erysipelas." (1)



HERBAL MONOGRAPH

Gotu Kola

Centella asiatica



Centella asiatica image by Helene de Joux



Centella asiatica_Kelli Taylor.jpeg

Monograph Compiled by Helene McGillick



HERBAL MONOGRAPH

Gotu Kola

Centella asiatica

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HERBAL MONOGRAPH

Mullein

Verbascum thapsus



Master Gardener Program <https://wimastergardener.org/article/common-mullein-verbascum-thapsus/>

Season: Mullein leaves should be collected in late spring to summer, before they turn brown. Dry them in the shade. Flowers can be collected fresh from the plant, preferably in dry weather, because moisture makes the flowers turn brown and become ineffective. Dry them out in the shade or using artificial heat no higher than 40 degrees. (3)

Latin Name: *Verbascum thapsus* (LINN.) Family: Scrophulariaceae

Common Name: Mullein

Other names: White Mullein. Candlewick Plant. Torches. Mullein Dock. Our Lady's Flannel. Velvet Dock. Blanket Herb. Velvet Plant. Woollen. Rag Paper. . Wild Ice Leaf. Clown's Lungwort. Bullock's Lungwort. Aaron's Rod. Jupiter's Staff. Jacob's Staff. Peter's Staff. Shepherd's Staff. Shepherd's Clubs. Beggar's Stalk. Golden Rod. Adam's Flannel. Beggar's Blanket. Clot. Cuddy's Lungs. Duffle. Feltwort. Fluffweed. Hare's Beard. Old Man's Flannel. Hag's Taper.



HERBAL MONOGRAPH

Mullein

Verbascum thapsus

Where you find it (geography): *Verbascum thapsus* (Linn.), the Great Mullein is a widely distributed plant, found on hedge-banks, by roadsides and on waste ground, more especially on gravel, sand or chalky soils.

It is common all over Europe and in temperate Asia as far as the Himalayas, and in North America. In Australia it is found in all states. In Britain everywhere (except in the extreme north of Scotland) and also in Ireland.

Safe usage pointers (contra indications): Mullein seeds contain the poisonous substance rotenone. Mullein leaf and flowers are generally regarded as safe. Although safety of this herb has not been scientifically validated a long history of use as a traditional medicine suggests that it is a safe substance when used within the recommended dose.

Energetics Moistening and cooling

Actions Lung Tonic, Expectorant, Demulcent

If medicinal - Uses The Leaves: Mullein leaves are most commonly used for respiratory complaints. They have a soothing, hydrating effect on the lungs.

It is a key remedy for people whom have been hit hard by a bronchial infection, with dry, hyper-reactive painful cough.

Mullein is also used as a tonic herb for chronic lung conditions such as asthma and COPD (chronic obstructive pulmonary disease) but is also helpful for viral colds and coughs, particularly dry coughs.

The large downy leaves of Mullein look some what like those of Comfrey and have been used in herbal medicine as an external wound healer to promote healing and abate nerve pain. A



HERBAL MONOGRAPH

Mullein

Verbascum thapsus

preparation of a decoction mixed with the wilted leaves is an excellent poultice for stubbed toes or broken fingers. (2)

The Root: Traditionally Mullein Root was used to sooth inflammation, treating nerve pain of injuries and specifically touted as a useful remedy to treat low back pain. (1)

More recent scientific studies have proved the antiviral activity exhibited for this herb. This is both for the tea and extracts.

Applications:

Infusions A tea can be made from the powdered dried leaves, 1-2 tsp herb per cup boiling water. Allow to steep 10-15 mins.

Repeated use, 1-4 cups daily is excellent for most lung complaints, including bronchitis or croup.(3)

Tinctures Fresh Root 1:2, dried Root 1:5; Drop dose: 10 drops to 3mL 3 x daily; Extract dose: 1-4mL 3 x daily.

Glycitract Dried Leaf 1:8 2.5-10mL 3 x daily for lung conditions

Ear Drops: Fresh flowers steeped in oil. An old German folk remedy for ear-ache. Mullein Flower Oil is simple to prepare. Cover the fresh flowers in oil, olive oil or similar, and leave in a glass jar, lid tightly fastened, in the morning sun for 2-3 weeks to infuse.

Bath A decoction of the leaves together with Sage, Marjoram and Chamomile Flowers used to bath in for colds, stiff sinews and cramps. (4)



HERBAL MONOGRAPH

Mullein

Verbascum thapsus

History/ stories:

- **Traditional**

FOKELORE AND TRADITION

Historically the long slender stalk of Mullein were stripped down and used to make candlewicks or torches “ for casting out evil spirits “. (5)

In the nineteenth century the soft downy leaves were rubbed on the cheeks by girls, causing a slight reddening of the cheeks due to the botanical substances, - a favourable effect similar to applying blush. For this reason the herb gained the nickname ‘Quaker rouge’. (2)

Monograph Compiled by Shona Taranto



HERBAL MONOGRAPH

Mullein

Verbascum thapsus

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HERBAL MONOGRAPH

Nettle

Urtica dioica



Nettle image by VickyHatton

Season: New nettle plants begin to flourish in early spring, maturing and becoming fibrous and laden with hanging seed into summer. Harvest leaf abundantly in early spring before plants go to seed.

Latin Name: *Urtica dioica*

Common Name: Nettle

Other names: Stinging nettle, common nettle, nettles

Pointers on identification: Nettle grows in single stalks, typically in dense clusters, and ranges in height from about 50cm to up to 2 metres! The leaves and stalks are covered in fine hairs (trichomes) that cause nettle's characteristic 'sting' when brushed up against. Leaves grow in opposite formation on the stalks, growing up to 12cm long in slender, serrated oval, lance or heart shapes.



HERBAL MONOGRAPH

Nettle

Urtica dioica

Common misidentification - what to look for to ensure you have the correct species: Nettle's botanical features are quite unique, without similar looking plants. An adventurous and fearless herbalist may nevertheless check by testing a small leaf for the characteristic sting.

Where you find it: Native to Europe, Asia and western North Africa, nettle can now be found across the world, growing widely through Australia, New Zealand and North and South America.

Growing conditions: You can often find nettle growing in cultivated or disturbed areas with rich soil – farmyards, empty lots and your backyard planter boxes or pot plants are a favourite of this spiky mama! Nettles prefer moist soil and may also be found alongside rivers and damp, boggy areas. As they thrive in rich soil, the appearance of nettles is a good indicator that the soil is rich in nutrients, particularly nitrogen and phosphorous.

Harvesting advice: Harvest with gloves and secateurs or use a large leaf such as Dock as a protective 'glove'. Once dried or cooked the stings are neutralised and the plant is safe to touch.

Safe usage pointers - Contra indications: Those with allergic reactions to nettle stings should not use topically.

Energetics: Cool, dry, stimulating

Actions:

Primary Diuretic, alterative, astringent, styptic, rubefacient (counter-irritant), galactagogue, circulatory stimulant, hypoglycaemic, hypotensive

Secondary Anti-inflammatory, anti-allergic, antiprostatic (root), nutritive tonic



HERBAL MONOGRAPH

Nettle

Urtica dioica

Medicinal Uses: Leaf: Allergic rhinitis, seasonal allergy, osteoarthritis (topically and internally), gout, reducing inflammation

Root: Prostatitis, benign prostatic hyperplasia

Herbal Recipes

Recipe: Dried tea

Collect leaves and dry for storage throughout the year. The leaves can be drunk alone or mixed with peppermint or chamomile for a nourishing and refreshing drink. Use one teaspoon in an infusion several times per day.

Recipe: Nettle soup

Collect the leaves while young and tender. Whole young stems can be added to soups or pick off bigger leaves. Combine with winter vegetables and seasonal fresh herbs such as garlic tops, parsley and rosemary.

Recipe: Nettle ointment

This can be made by infusing dried leaves into olive oil and allowing the mixture to steep for 4 to 6 weeks. To make the ointment, melt together the strained oil and beeswax in a ratio of four parts of the strained oil with one part of beeswax. Pour into a container while warm and liquid. The ointment can be used to soothe irritated skin and for bites, stings, itches or small burns.



HERBAL MONOGRAPH

Nettle

Urtica dioica

Recipe: Nettle Pesto Adapted from recipe by Hank Shaw (<https://honest-food.net/nettle-pesto/>)

Prep Time: 15 mins

Cook Time: 5 mins

Total Time: 20 mins

Servings: 1 cup

Ingredients

3– 4 cups fresh stinging nettles (use gloves or a tea towel when picking!)

3 garlic cloves, roughly chopped

2 heaping tablespoons toasted pine nuts (or other nut of your choice)

2 tablespoons grated cheese (any hard cheese will do – or substitute with savoury yeast flakes for a vegan pesto)

Salt

Olive oil (use the good stuff)

Instructions

Bring generously salted water to boil in a pot big enough to hold nettles and stems. Once boiling, using tongs, place the nettles in the pot (stems ok). Blanch in rapidly boiling water for 1 ½ minutes. Using tongs, remove from water and place in ice water bath, to chill rapidly. Separate leaves from bigger stems, placing all leaves and some of the smaller stems on a clean kitchen towel. Wring dry. You should have just about 1 cup of nettles.

Pesto is best made with a mortar and pestle, thus the name, which means "pound." You can make this in a food processor, but it won't be the same. First add the toasted pine nuts and crush lightly -- as they are roundish, they will jump out of your mortar if you get too vigorous. If you are using a processor, pulse a couple times.

Add the garlic to the mortar, then pound it all enough so that the pieces don't fly around. Add the salt, cheese and the nettles and commence pounding. Mash everything together, stirring with the pestle and mashing well so it is all fairly uniform. With a food processor, run the machine so everything combines, but isn't a smooth paste. You want it with some texture.

Start adding olive oil. How much? Depends on how you are using your pesto. If you are making a spread, maybe 2 tablespoons. If a pasta sauce, double that or more. Either way, you add 1 tablespoon at a time, pounding and stirring to incorporate it. If you are using the processor, drizzle it in a little at a time. Serve as a spread on bread or crackers, as a pasta sauce or as a dollop on fish or poultry.



HERBAL MONOGRAPH

Nettle

Urtica dioica

History/ stories

Traditional

Nettle has been found to contain high amounts of minerals, especially iron and has been used traditionally as a tonic herb. Dorothy Hall has described the herbs action by stating “Nettle’s greatest use is in making more oxygen available for the vital organs and the major blood vessels ... Nettles may be just the spark needed to stoke up the fires again!”

Horticultural

Nettles have been used in a horticultural manner as a green manure which is dug into the soil to increase soil quality, or as a fertiliser and tonic by drowning leaves for several weeks to make a ‘garden tea’.

Monograph Compiled by Vicky Hatton and Tulsi Manjari



HERBAL MONOGRAPH

Nettle

Urtica dioica

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HERBAL MONOGRAPH

Plantain

Plantago major & *Plantago lanceolata*



Left to right: First two images are *Plantago major* (source: Rachel Hull)
Second two images are *Plantago lanceolata* (source: Wikipedia and Rachel Hull)

Season: Perennial

Latin Name: Plantago

Common Name: (*Plantago major*): Plantain; Common plantain, Broad leaf plantain (1); Greater plantain (26), Common plantain (3). Rat's tail plantain (16). (*Plantago lanceolata*): Ribwort, Narrow leaved plantain (23); English plantain, Snake plantain (16).

Other names: White man's footprint (1; 20).

Pointers on identification: Basal rosette of dark green leaves with 5-9 distinctive parallel veins (26; 9); elongated ridged stalks eventually display non-distinctive flowers (26). *Plantago major* has broader, ovate leaves (16); grows 40-60 centimetres tall with long flower stems that resemble spikes. Inconspicuous green/white flowers grow all along the stem, which eventually form husks that later drop hundreds of tiny seeds (22). *Plantago lanceolata* has narrower, elongated, strap like leaves



HERBAL MONOGRAPH

Plantain

Plantago major & *Plantago lanceolata*

(16), with 5-7 parallel vein (9). Flower heads only extend 3-5 centimetres at top of the stem. (22), rather than all along as in *P. major*.

Common misidentification. What to look for to ensure you have the correct species:

In Europe, wild harvested Plantain has been adulterated with *Digitalis lanata* (Greek foxglove) as the plants look very similar when young before flowering. (6). Although they look nothing alike, not to be confused with the cooking banana that is also called Plantain.

Where you find it (geography): REGION OF AUST Originated in Europe, northern and central Asia; has spread around the world including America and Australia (26; 1), and New Zealand. Common on paths and roadsides (1); commonly found in parks and lawns around Australia.

Growing conditions: Grows in compacted soil (28) although adapts to most soils; tolerates drought and frost (2).

Safe usage pointers (contra indications):

- *P. major* and *P. lanceolata* may affect uterine muscle tone so contraindicated for pregnancy and lactation (18, 19).
- Two cases of contact dermatitis have been attributed to *P. major* (7). Contraindicated if hypersensitive to active substances (8).
- Possible laxative and hypotensive effects with excessive use of *P. major* (18).

Energetics: From Ayurveda: *Plantago major* tastes astringent and bitter, has a cooling energy, and a pungent post digestive effect (10); old Greek medicine classified it as drying, due to its ability to 'draw' (eg: infection/pus) and reduce water and blood overflow (28).



HERBAL MONOGRAPH

Plantain

Plantago major & Plantago lanceolata

Actions: Bitter, astringent, sweet, mucilaginous, cooling; unique in that has both drying (astringent) and moistening (demulcent) qualities (20). Cooling; moistening; astringent and emollient (28); neutral and bland (16).

Constituents: *Plantago major* (leaf): contains flavonoids (including apigenin, baicalein and luteolin), terpenoids (leaves), iridoid glycosides (aucubin), alkaloids, phenolic compounds, polysaccharides (seeds), vitamins (C & carotenoids) and fatty acids (leaves and seeds) (1).

If medicinal - Uses

Note: regarding *Plantago major* usage, unless stated otherwise, the following authors have listed *P. major* & *P. lanceolata* together as *Plantago spp.* without distinguishing their uses.

Plantago major (leaf):

- Mashed leaves are used as a drawing poultice and used on skin infections and eczema (6). For toothache and abscess, Richo Cech (6) suggests wrapping mashed Plantain leaves in gauze and placing between affected area and inner lip. Fresh leaves of *Plantago spp.* are traditionally chewed and used topically as a poultice on wounds and for drawing out splinters (25). Used as a poultice for poison oak and insect bites (24).
- Used topically for haemorrhoids (13).

Plantago lanceolata (leaf):

- Traditionally used as a gentle expectorant for coughs and bronchitis; soothing to inflamed membranes (12).
- Traditionally used as a urinary tract demulcent (5).
- Mucilaginous and used as a relaxing expectorant and for dry and overly sensitive mucous membranes (16). Traditionally used as a gentle expectorant for coughs and bronchitis; soothing to inflamed membranes (12).



HERBAL MONOGRAPH

Plantain

Plantago major & Plantago lanceolata

Indications:

Plantago spp. (leaf) traditionally used as a soothing demulcent for reducing urinary, respiratory and gastrointestinal tract irritation (25).

***Plantago lanceolata* (leaf):**

- Indicated for dry cough, oral and pharyngeal irritation (8). Used for the upper respiratory tract catarrh (5), including sinusitis, mild bronchitis, middle ear infection and nasal catarrh (16).
- Indicated for peptic ulcer and gastritis (4).

Dose: *P. major*. Dry herb: 6-12g/day (23). Liquid extract: 15-30mL/week (1:2) (23). *P. lanceolata*: Dry herb: 6-12g/day (23). Liquid extract: 20-40mL/week (1:2) (4).

Interactions known: Mucilage from *P. lanceolata* and *P. major* may potentially slow drug absorption (18,19). *P. major* contains vitamin K so caution advised with concurrent Warfarin or anticoagulant use (18, 27).

Edible: *The very young leaves are reported to be edible, although older leaves are not palatable (6), as they are very fibrous (22).*



HERBAL MONOGRAPH

Plantain

Plantago major & Plantago lanceolata

History/ stories:

- **Traditional**

Has been used medicinally for thousands of years, with the first known written account appearing in Arabic in the Hashayesh or Materia Medica, written by Greek botanist Pedanius Dioscorides (40-90 AD) (17). The Vikings are reputed to have used *P. major* leaves for healing wounds; while 'Liber Harbarum', Henrik Harpestreng (1244), from Denmark, recommended *P. major* be mixed with honey for wounds (21). Plantain was also mentioned by Shakespeare in Romeo and Juliet as being excellent for broken skin (21).

- **Evidence based**

While there is a long history of traditional use for *P. major* and *P. lanceolata*, human research is limited and mostly experimental, animal and *in vitro*. A hydroethanolic extract (50%) of *P. major* was found to protect isolated mitochondria against tert-butyl hydroperoxide (t-BOOH) induced oxidative stress (experimental) (15). Methanol extract of *P. lanceolata* inhibited Fe²⁺/ascorbate-induced lipid peroxidation of bovine brain liposomes (11). Water extracts and polyphenol rich ethanolic extracts (1.0mg/mL and 0.1mg/mL) of *P. major* (leaves) stimulated cell proliferation/migration in an *in vitro* scratch assay (29). However, the most highly concentrated ethanolic extract (10.0mg/mL) prevented cell proliferation/migration, while no adverse effects were noted for the concentrated water extracts (29). Aqueous and ethanolic extracts of *P. major* (leaf) reduced levels of inflammatory cytokines and attenuated the inflammatory reaction following liver injury induced by acetaminophen (experimental) (14).

Monograph Compiled by Rachel Hull www.theurbanherbalist.com.au



HERBAL MONOGRAPH

Plantain

Plantago major & Plantago lanceolata

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HERBAL MONOGRAPH

Plantain

Plantago major & Plantago lanceolata

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HERBAL MONOGRAPH

St. Mary's Thistle

Silybum marianum



St. Mary's Thistle by Roger Darlington

Season: An annual / biennial (Simmons et al. 2016 p. 179, Fisher 2009 p. 49), which flowers in late spring to summer and fruits during mid-summer to autumn (Fisher, 2009 p. 49).

Latin Name: *Silybum marianum*

Common Name: St. Mary's Thistle

Other names: Milk thistle, lady's thistle (Simmons et al. 2016 p. 179), *Cardus marianus*, cardo blanco, holy thistle, lady's milk, Marian thistle, silybum, true thistle (Braun & Cohen 2015 p. 952),



HERBAL MONOGRAPH

St. Mary's Thistle

Silybum marianum

Marian Thistle (Grievés 1998 p. 797) and Our Lady's Thistle (The Project Gutenberg 2015 p. 690, Grievés 1998 p. 797, Grievés 1992 p. 797, Culpeper 1992 p. 285-286).

In French it is called Chardon Marie and Mariendistel, Weisse Wegdistel and Frauendistel in Germany (Holmes 2007 p. 415).

Pointers on identification: Heavily veined or variegated leaves and bright purple spikey flowers (Simmons et al. 2016 p. 179) of a metre or so in diameter, framed in long, firm, spiny bracts and can grow to a height of 2 meters (Flora, 1998, DPIPWE n.d).

Nicholas Culpepper, in The Complete Herbal (The Project Gutenberg 2015 p. 699, Culpeper 1992 p. 285-286), described *Silybum marianum* or Our Lady's Thistle as "large, broad leaves lying on the ground cut in, and as it were crumpled, but somewhat hairy on the edges of a white green shining colour, wherein are many lines and streaks of a milk white in colour, running all over and set with many sharp and stiff prickles". He continues with descriptions of the thistle, "the end of every branch comes forth with great prickly Thistle-like head, strongly armed with prickles, and with bright purple thumbs rising out of the middle; after they are past, the seed grows in the said heads, lying in soft white down, which is somewhat flattish in the ground, and many stings and fibres fasten thereunto" (The Project Gutenberg 2015 p. 699, Culpeper 1992 p. 285-286).

Common misidentification. What to look for to ensure you have the correct species:

There are many types of thistle's that may be confused with *Silybum marianum*. Sow Thistle *Sonchus oleraceus*, is often confused with milk thistle as the name 'milk thistle' is used interchangeably. Differentiation is due to Sow Thistle being less spikey with flowers that are yellow. Their petals may be cooked and used like spinach (Grubb 2019 p. 107, 127).



HERBAL MONOGRAPH

St. Mary's Thistle

Silybum marianum

Below is a table comparing the different species to prevent misidentification (DPIPWE n.d). The 2nd column of illustrations depicts the species of this monograph, *Silybum marianum*.

**SOME TASMANIAN THISTLES
and their control in non crop situations**

	<i>Silybum marianum</i>	<i>Silybum marianum</i>	<i>Silybum marianum</i>	<i>Silybum marianum</i>	<i>Silybum marianum</i>	<i>Silybum marianum</i>	<i>Silybum marianum</i>	<i>Silybum marianum</i>	<i>Silybum marianum</i>
Plant habit									
Stems									
Leaves									
Flowers									

Tasmanian Department of Agriculture (1978) (DPIPWE (n.d)).

*Second column profiles St Mary's Thistle

Where you find it (geography): **REGION OF AUST** Native to Mediterranean regions, Europe, Africa, Asia and has been naturalised in USA and Australia (Simmons et al. 2016 p. 179, Flora et al. 1998 p. 139, Balch 2002 p. 95).

Growing conditions: Culpeper wrote, "It frequents on the banks of almost every ditch" (The Project Gutenberg 2015, Culpeper 1992 p. 285-286).



HERBAL MONOGRAPH

St. Mary's Thistle

Silybum marianum

Classified as a noxious weed, *Silybum marianum*, is resistant to drought and frost, grows from seed with sufficient water and favours sunny, open environments (Fisher, 2009 p. 49, Flora et al. 1998 p. 139).

Silybum marianum is found in agricultural areas, roadsides, waste areas, pastures and some crops and grows well in sheep camps and stockyards (DPIPWE (n.d)).

Safe usage pointers (contra indications): Contraindicated in allergy to Asteraceae (Compositae) family (Braun & Cohen 2015 p. 961). Considered safe in pregnant women with pre-eclampsia (Braun & Cohen 2015 p. 961). Minor side effects such as GIT disturbance, headaches and skin rashes are rare but may occur and allergic reactions are possible (Fisher, 2009 p. 51). One incidence of anaphylaxis has occurred following herbal tea ingestion. Although, this herb is generally accepted as safe even with long-term administration (Fisher, 2009 p. 51, Bone & Mills 2013 p. 862).

Silybum marianum may interact with drugs metabolised by certain CYP450 enzymes (Fisher 2009 p. 51) resulting in either induction or inhibition of drug. CYP2C8 and CYP2C9 interactions are possible, although unlikely. CYP2C19, CYP2D6 and CYP3A4 interactions are considered unlikely (Braun & Cohen 2015 p. 961, Doehmer et al. 2011, Kiruthiga et al. 2013).

Energetics: "Our Lady's Thistle is under Jupiter, and thought to be as effectual as Carduus Benedictus for agues." (Culpeper 2015 p. 691, Grievés 1998 p. 797, Grievés 1992 p. 797).

Actions:

- Hepatoprotective (Fisher, 2009 p. 49-50, Braun & Cohen 2015 p. 952, Ali Khan et al. 2014 p. 478, Bone 2003 p. 326)
- Hepatic trophorestorative (Bone 2003 p. 326)



HERBAL MONOGRAPH

St. Mary's Thistle

Silybum marianum

- Digestive tonic (Fisher, 2009 p. 49)
- Galactagogue (Fisher, 2009 p. 49, Hoffman 1990 p. 215, Bone & Mills 2013 p. 877)
- Demulcent (Hoffman, 1990 p. 215)
- Chologogue (Hoffman, 1990 p. 215)
- Choloretic (Bone 2003 p. 326)
- Anti-cancer (Fisher, 2009 p. 50, Simmons et al. 2016 p. 179)
- Anti-inflammatory (Braun & Cohen 2015 p. 952, Ali Khan et al. 2014 p. 478)
- Antioxidant (Braun & Cohen 2015 p. 952, Ali Khan et al. 2014 p. 478, Bone 2003 p. 326)
- Antifibrotic (Braun & Cohen 2015 p. 952)
- Anti-hypercholesterolaemic (Braun & Cohen 2015 p. 952, Ali Khan et al. 2014 p. 478)
- Anti-hyperglycaemic (Braun & Cohen 2015 p. 952)
- Immunomodulatory (Braun & Cohen 2015 p. 952, Ali Khan et al. 2014 p. 478)
- Antiviral (Braun & Cohen 2015 p. 952)

If medicinal – Uses: Seeds are used medicinally (Fisher, 2009 p. 49, Braun & Cohen 2015 p. 952, Hoffman 1990 p. 215).

Silymarin is comprised of a group of flavonolignans referred to as 'silymarin', which includes, silybin, silydristin, silydianin, isosilybin, dihydrosilybin, silchrystin (Holmes 2007 p. 415). There is also silybin A and B, isosilybin A and B, silychristin, silydianin and 2,3-dehydro derivatives (Bone & Mills 2013 p. 862, Mills 1991 p. 442), with silybin / silibinin (A & B) the most active (Ali Khan et al. 2014 p. 478).

In Culpeper's 'Herbal Remedies' he states, "All thistles, Our Lady's Thistle included, are good for the blood and the liver. They stimulate the circulation and remove obstructions. It is a safe remedy and can be taken in the form of a tisane morning and evening, a teacupful each time; an ounce of the



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St. Mary's Thistle

Silybum marianum

herb should be infused for half an hour in a pint of boiling water" (Culpeper, 1976 p. 87). A tisane is a "tea, an aqueous preparation made by decoction (q.v.) or infusion" (Fluck 1976 p. 188).

Infusion: Take 1 tspn of dried leaves, infuse in boiling water and drink 3 times daily (Hoffman 1990 p. 215).

Milk thistle was given as a tea for sea, plane and car sickness by infusing the leaf, seeds and root in a litre of water and some honey and consumed a cup of this tea prior to travelling (Messegue, 1981 p. 277). *Silybum marianum* infusion, "as a tonic, an aperient, an anti-pyretic (and for sick liver and circulatory problems): put a leaf, a small root or 3 pinches of seeds into a litre (1 ¾ pints) of water. (2 to 3 cup-fuls a day)" (Messegue, 1981 p. 276).

Liquid extract: 1:5, (25%) 2 – 4 mL, t.i.d (Fisher, 2009 p. 51)
1:1, 4 – 9 mL/day (Braun & Cohen 2015 p. 960, Bone & Mills 2013 p. 862).

Glycetract: 1:1, 4.5 - 8.5mL /d or 30-60mL /week (Bone 2003 p. 326).

Seed: 4-9 g/ day (Bone & Mills 2013 p. 862)

Externally: A decoction of leaves was used as a vulnerary for infection, ulcers and wounds (Messegue, 1981 p. 276). "Put 10-20 pinches of fresh or of dried leaves into a litre (1 ¾ pints) of water" (Messegue, 1981 p. 276).

Indications: Dose: Interactions known:

- Dyspepsia (Fisher, 2009 p. 49, Braun & Cohen 2015 p. 952, Bone 2003 p. 326)
- Liver damage (Fisher, 2009 p. 49, Braun & Cohen 2015 p. 952, Bone 2003 p. 326)



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- Detoxification (Stengler 2001 p. 332).
- Environmental toxins (Braun & Cohen 2015 p. 952, Bone 2003 p. 326)
- Cirrhosis (Fisher, 2009 p. 51)
- Drug abuse (Fisher, 2009 p. 51, Stengler 2001 p. 332)
- Liver dysfunction (Fisher, 2009 p. 51, Bone 2003 p. 326)
- Chemical poisoning (Fisher, 2009 p. 51, Bone 2003 p. 326)
- Jaundice (Fisher, 2009 p. 51)
- Hepatitis (Fisher, 2009 p. 51, Bone 2003 p. 326, Stengler 2001 p. 333)
- Increase lactation (Fisher, 2009 p. 51)
- Haemochromatosis (Braun & Cohen 2015 p. 959)
- Hypercholesterolaemia (Braun & Cohen 2015 p. 952)
- Poor lactation (Hoffman 1990 p. 215)
- Gallbladder dysfunction (Hoffman 1990 p. 215, Bone 2003 p. 326, Stengler 2001 p. 333)

If edible - Uses – recipes:

Culpeper wrote, “the whole plant is bitter in taste” (The Project Gutenberg 2015 p. 699).

“Disarmed of its prickles and boiled, it is worthy of esteem, and thought to be a great breeder of milk and proper diet for women who are nurses” said John Evelyn (Grieves 1992 p. 797).

M. Grieves, in ‘A Modern Herbal’ reflects on Bryant’s writings from ‘Flora Dietetica’ and states, “The young shoots in the spring, cut close to the root with part of the stalk on, is one of the best boiling salads that is eaten, and surpasses the finest cabbage. They were sometimes baked in pies”. (Grieves 1992 p. 797).



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Silybum marianum

The stalk is edible and were believed to taste nice and considered to be highly nutritious (Grievés 1992 p. 797). Culpeper spoke of boiling the young plant when tender and consume in spring as a blood alterative or cleanser (Grievés 1992 p. 797).

For cooking the leaves and stems were used. Leaves are bitter and possess and overpowering saltiness (Fisher, 2009 p. 49) and were also used in salads (Grievés 1992 p. 797). Seeds possess a bitter, oily taste when consumed (Fisher, 2009 p. 49). Thistle heads have previously been boiled and consumed in a similar manner to artichokes (Grievés 1998 p. 797, Chevallier 2016 p. 137).

Herbal Recipes

Milk Thistle Liver Loving Chai

Ingredients:

2 oz (56g) milk thistle seeds ground, 2 oz (56g) burdock root ground, 1 oz (28g) ginger granules, 1 oz (28g) cinnamon ground, 0.5 oz (14g) cardamom pods crushed, 0.5 oz (14g) fennel seeds.

NOTE: A coffee grinder can grind milk thistle and burdock root, until it becomes a coarse powder

Method:

1. Mix all ingredients together and seal in an airtight container
2. For chai, add one tspn and mix with 8-10 oz of milk or alternative, steep then strain to drink (Young, 2019).

History/ stories:

• Traditional

Silybum marianum has been used medicinally for approximately 2000 years and in 1969 was approved in Europe for medicinal use (Fisher, 2009 p. 49).



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Silybum marianum

Historically, it has been used as a snakebite remedy (Braun & Cohen 2015 p. 951). In ancient Greece, the herbalist Dioscorides, wrote “that a tea of milk thistle seeds could cure the bite of poisonous snake” (Messegue 1981). Remedies recorded by the Saxons state, “this wort if hung upon a man’s neck it setteth snakes to flight.” (Greive 1992 p. 797).

Named ‘Milk thistle’ due to the white veins on spikey leaves it was thought to possess Virgin Mary’s milk (Braun & Cohen 2015 p. 951, Flora et al. 1998 p. 139). Milk Thistle was regularly mentioned by the prophets in the Bible (Meyer 1976 p. 83).

The Eclectics used milk thistle for liver congestion, varicose veins, menstrual irregularities and dysfunction of the spleen and kidney’s (Flora et al. 1998 p. 140).

Nicholas Culpeper said it could be used to “prevent and cure the infection of the plague: as also to open the obstructions of the liver and spleen, and thereby is good against jaundice. It provokes urine, breaks and expels the stone, and is good for the dropsy. It is effectual also for the pains in the sides, and the many other inward pains and gripings” (The Project Gutenberg 2015).

• Horticultural

Due to large stout spines *Silybum marianum* was used in place of barbed wire (Flora 1998 p. 139).

Cattle and sheep can incur nitrate poisoning from grazing on large amounts of St. Mary’s Thistle when feed is unavailable, leading to a dramatic onset of symptoms, with often fatal results due to toxicity (DPIPWE (n.d), Lewis & Elvin-Lewis 1977 p. 58).

Some people called the leaves ‘Pig Leaves’ as they were a favourite of pigs. Goldfinches were known to feed on the seeds (Grieves 1992 p. 797).



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• Evidence based

Silybin in *Silybum marianum* has been shown to reduce iron uptake and may be a beneficial adjunct treatment and chelating agent in haemochromatosis (Hutchinson et al. 2010).

Silibinin is considered an antidote to the death cap mushroom, *Amanita phalloides* (Ali Khan et al. 2014 p. 478, Floersheim et al. 1982, Bone & Mills 2013 p. 875, Griggs 1997 p. 368, Grubb 2019 p. 127).

In a systematic review and meta-analysis by Zhong et al. (2017), consisting of 8 randomised controlled trials, *Silybum marianum* was used successfully to treat non-alcoholic fatty liver disease (NAFLD) via significant reductions of transaminase levels, AST and ALT (Zhong et al. 2017).

In a phase II-III, randomized, parallel, placebo-controlled, triple-blind study, *Silybum marianum*, at a dose of 140mg, t.i.d, for a period of 45 days, reduced glycaemic and lipid profiles in a cohort of 40, type 2 diabetes mellitus patients aged between 25 and 50 years of age (Ebrahimpour-koujan et al. 2018).

An emerging theory held by Liu et al. (2019) speculates that Alzheimer's disease (AD) may be a type of "brain diabetes". AD and Type 2 Diabetes Mellitus (T2DM) share common factors including β -amyloid deposits, inflammation, oxidative stress, altered glucose metabolism and insulin and insulin-like growth factor-1 (IGF-1) dysfunction (Liu et al. 2019 p. 3-18). *In vivo* studies have shown that 'Silibinin' may have neuroprotective action in AD as it significantly improved memory and cognition via hyperphosphorylation inhibition of tau proteins, upregulation of insulin signalling pathways and by reducing neuronal apoptosis. Suggesting that *Silybum marianum* may be a viable treatment for those with AD and comorbid T2DM (Liu et al. 2019 p. 3-18).



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Some therapeutic actions of Silymarin are outlined in the below diagram (Frederico et al. 2017 p. 191).

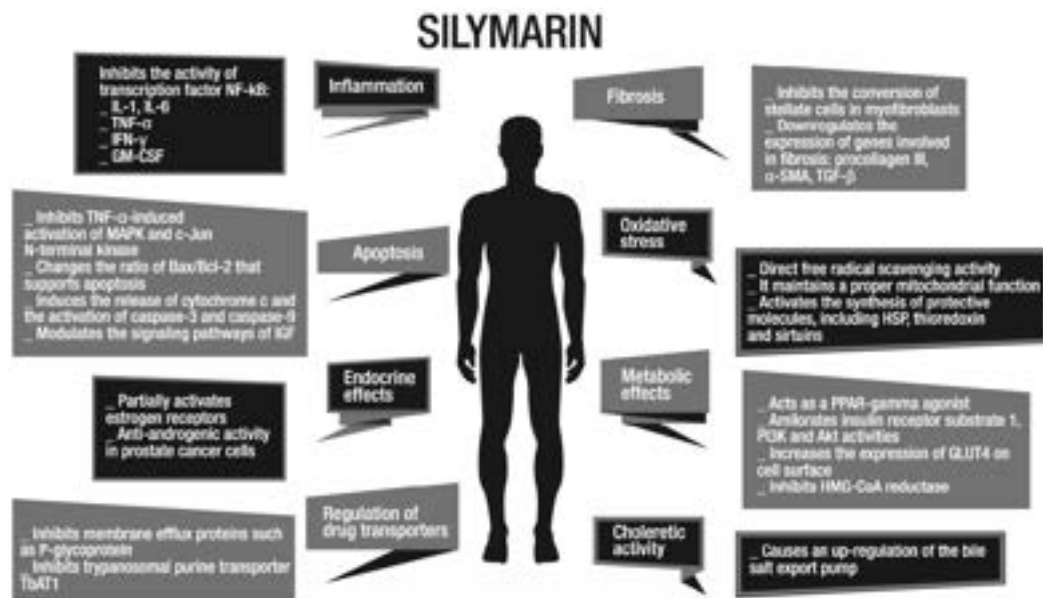


Figure 1. Different therapeutic activities of silymarin. IL-1/6: interleukin1/6; TNF-α: tumor necrosis factor-α; IFN-γ: interferon-γ; GM-CSF: granulocyte-macrophage colony stimulating factor; MAPK: mitogen-activated protein kinase; Bax: bcl-2-like protein 4; Bcl-2: B-cell lymphoma 2; IGF: insuline-like growth factor; α-SMA: α-smooth muscle actin; TGF-β: transforming growth factor-β; HSP: heat shock proteins; PPAR-γ: peroxisome proliferator-activated receptor γ; PI3K: phosphatidylinositol-4,5-bisphosphate 3-kinase; Akt: protein kinase B; HMG-CoA: 3-hydroxy-3-methylglutaryl coenzyme A; GLUT 4: glucose transporter type 4.

(Frederico et al. 2017 p. 191).



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St. Mary's Thistle

Silybum marianum



St. Mary's Thistle_Oshims.com



St. Mary's Thistle_Roger Darlington



St. Mary's Thistle_Roger Darlington



HERBAL MONOGRAPH

St. Mary's Thistle

Silybum marianum



(St. Mary's Thistle_Jessica Caven)



(St. Mary's Thistle_Jessica Caven)



HERBAL MONOGRAPH

St. Mary's Thistle

Silybum marianum



(St. Mary's Thistle_Jessica Caven)

Monograph Compiled by Jessica Caven www.dotnaturopathicdispensary.com.au



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Silybum marianum

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Additional source books/more information

Image: Oshim: <http://www.oshims.com/herb-directory/m/milk-thistle>

Image: Roger Darlington [https://wildflowerfinder.org.uk/Flowers/T/Thistle\(Milk\)/Thistle\(Milk\).htm](https://wildflowerfinder.org.uk/Flowers/T/Thistle(Milk)/Thistle(Milk).htm)

Image: Department of Primary Industries, Parks, Water & Environment (DPIPWE) (n.d) Some Tasmanian Thistles. Tasmanian Department of Agriculture (1978). Retrieved November 2019 from <https://dpiuwe.tas.gov.au/Documents/Thistle-id-poster.pdf>



HERBAL MONOGRAPH

White horehound

Marrubium vulgare



Images from <https://www.foodforests.eu/products/marrubium-vulgare-white-horehound> and <https://www.britannica.com/plant/horehound>

Season: Winter and spring

Latin Name: *Marrubium vulgare* (*M. vulgare*)

Common Name: White horehound

Other names: In many old herbal texts *M. vulgare* is referred to as Hoarhound. Egyptian priests called this herb 'seed of the Horus, bulls blood and eye of the star (1)'. In Tunisia it is called Marrubia. Some say the Latin name Marrubium was derived from the ancient town in Italy, Mariaurbs. Others say that the name is derived from the Hebrew word marrob which translates to 'a bitter juice' and was taken over Passover (2).

Pointers on identification: An erect densely hairy perennial plant, less than .5 metre tall with angular wooly stems and veined grey-green leaves with rounded clusters of tiny white flowers at



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White horehound

Marrubium vulgare

each node (3). It has wrinkled leaves covered in white hairs, giving it a 'wooly appearance' (1). The plant does not flower until it is two years old (1).

Common misidentification. What to look for to ensure you have the correct species: Both a part of the Lamiaceae family, white horehound should not be confused with black horehound or *Ballota Nigra*. *B. nigra* which has less hair and lacks the 'wooly' appearance. It also has purple flowers rather than white ones found in *M. vulgare* (4).

Where you find it (geography): REGION OF AUST: Although this herb is native to Europe and Asia, it is now a common roadside weed throughout Australia and the rest of the world (5). Traditional Herbalist James Neil said it is growing in nearly "every land under the heavens. There are some people who have it growing at their doors, and yet are so ignorant of its virtues, that they will go about with a sore throat or cold, or they will give money for medicine that is not so good" (6).

It is spread throughout Australia, especially in Tasmania and South Australia.

Growing conditions: Grieve (1) states that it "flourishes in waste places and by roadsides". It grows in nearly any soil but thrives best in light calcareous soil and a sunny position (2).

Safe usage pointers (contra indications): Although *M. vulgare* is generally thought as safe, research is limited and some side effects such as contact dermatitis, abnormal heart rate, low blood pressure and decreased glucose level have been reported (2).

Actions Traditionally used as bitter tonic, digestive, relaxing expectorant (2), recent pharmacological investigations show that it may also have antihypertensive, hypolipidemic, antioxidant, anti-inflammatory, antidiabetic, antiasthmatic, antibacterial, antifungal, and antitumor activity (1,7,8).



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White horehound

Marrubium vulgare

If medicinal - Indications: (2)

- Bronchitis
- cough
- Pertussis
- Poor appetite
- Dyspepsia
- Bloating and flatulence
- Jaundice
- Haemorrhoids
- Diarrhoea

Dose: Dry herb 3-6 grams per day or liquid extract 1:2 15-40mL a week (9)

Taken in large doses it acts as a gentle purgative (1).

Interactions: none known (2).

If edible – Uses: Herbalist James Neil said to take two ounces (56 grams) of green herb or ounce of dry herb (28 grams) and simmer for ten minutes in a pint of water, strain, sweeten with honey and drink a glass 3-6 times a day for a sore throat, cough, hoarseness, or a cold (6).

It has also been used to make Horehound Ale, tea, and candy (1)



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White horehound

Marrubium vulgare

Herbal Recipes

Recipe: Horehound Candy

From <https://joybileefarm.com/making-horehound-cough-drops-and-other-medicinal-lozenges-for-the-homestead-medicine-chest/>

To start make a strong decoction by steeping 1 cup of dried horehound leaves in 3 cups of boiling water. Cover and let steep for 15 minutes. Strain completely and squeeze leaves to get all the liquid out. If you have extra liquid there is no need to worry as it will boil off during candy making.

- 2 cups of brown sugar
- 1/2 cup of honey
- 2 -3 cups of the strained decoction

Add all ingredients to a 3 quart pot. Stir in sugar to completely dissolve. Put a lid on the pot and begin to heat it over medium heat. When it boils rapidly, remove the lid and with a brush and water, dissolve any sugar crystals that may be adhering to the side of the pan. Do not stir the mixture or it will seize. Boil rapidly and insert candy thermometer. Boil to the hard crack stage or 300 F. Remove from heat. Add flavouring if desired (eucalyptus, lemon, or vanilla) but stir as little as possible.



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White horehound

Marrubium vulgare

History/ stories:

- **Traditional**

M. vulgare was esteemed by the Romans for its medicinal properties (1). Culpeper used it for tough phlegm in the chest, and especially for those who are asthmatic or short winded. It was the principle ingredient for caesars antidote for poisons (1).

It is a traditional bitter remedy used to stimulate gastric acid secretion due to its marrubinic acid content (10).

It is also traditionally used as tea for coughs and sore throat.

- **Horticultural**

An infusion of leaves is given as an insecticide against caterpillars (11).

- **Evidence based**

Analgesic and antinociceptive

- Hydro alcoholic extract of *M. vulgare* ariel parts and Marrubiin showed significant analgesic activity in chemically induced pain in mice. The exact mechanism of marrubin analgesic activity is unknown but it does not interact with the opioid receptor or the cyclooxygenase products from the arachidonic acid pathway (7,12,13,14).

Antioxidant and anti-inflammatory



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White horehound

Marrubium vulgare

- *M. vulgare* has been shown to be a potent antioxidant and anti-inflammatory agent due to the high polyphenols and diterpenes content (2). Glycosidic phenylpropanoid esters derived from *M. vulgare* showed cycle-oxygenase 2 inhibitory activity (13). Other studies showed that doses ranging from 200-400mg/kg in mice showed significant anti-inflammatory effects.

Antiasthmatic

- Five asthmatic patients reported successful use in using a decoction of *M. vulgare* in the prevention of asthmatic fits (15,16).

Antispasmodic

- Hydroalcoholic extracts of *M. vulgare* exhibited significant antispasmodic activity in vitro. It's activity was attributed to inhibition of acetylcholine, prostaglandin E, histamine, bradykinin, and oxytocin with cholinergic contraction selectivity (17).

Gastroprotective

- Marrubiin and a diterpene were isolated from *M. vulgare* leaves and were found to have protective effect in ethanol induced ulcers in mice in dosages of 50 and 100mg/kg. These gastroprotective effects were comparable with omeprazole 30mg/kg and are thought to be induced by endogenous sulfhydryls and nitric oxide synthase that inhibit gastric secretion through vasodilation (18).

Anti-oedematous

- 100mg/kg of marrubiin showed significant inhibition of ovalbumin-induced allergic oedema in mice with microvascular leakage, comparable to dexamethasone (19).

Anti hypertensive



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White horehound

Marrubium vulgare

- *M. vulgare* extract has been shown to be vasorelaxant and improve impaired endothelial function in hypertensive rats. Oral administration of aqueous extract of *M. vulgare* lowered systolic blood pressure of spontaneously hypertensive rats and inhibited the contractile responses of rat aorta to noradrenaline and to KCl(20).
- Root extract of *M. vulgare* of 72 and 120 ug/mL produced dose dependent relaxation in precontracted aortic rings with and without endothelium in rats (21).

Hypoglycemic

- 43 type 2 diabetic patients received aqueous extract of *M. vulgare* for 21 days while maintaining their medical treatment and saw a reduction in cholesterol (0.64%), triglycerides (4.16% and 5.78%) compared to test groups (22).
- 500mg/kg/day of methanolic extract of *M. vulgare* showed a significant increase in plasma insulin and tissue glycogen of streptozotocin-induced diabetic rats (23).
- 300 mg/kg of Ethanolic extract of *M. vulgare* showed hypoglycemic effect on alloxan-induced diabetic rats (24).
- At a dose of 100mg/kg of aqueous extract there was a 50% decrease in blood glucose level of alloxan-induced diabetic rats and 60% for doses of 200 and 300mg/kg (25).
- Methanol extract of *M. vulgare* found to have Proliferator-activated receptor γ (PPAR γ) agonist activity in a luciferase reporter assay (26). PPAR γ regulates lipid and glucose metabolism.



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White horehound

Marrubium vulgare

Hepatoprotective

- Extract of *M. vulgare* exhibited hepatoprotective activity by reducing elevated levels of glutamate oxaloacetate transaminase (SGOT) by 40.16 %, serum glutamate pyruvate oxaloacetate transaminase (SGPT) by 35.06% and alkaline phosphatase by 30.51% and increased total protein (TP) levels comparable to silymarin (27).
- Another study found that vulgarin, a compound derived from *M. vulgare* showed significant hepatoprotective activity in carbon tetrachloride induced toxicity in rats similar to silibinin (28).

Antioxidant

- Various studies suggest that the high phenolic secondary metabolites content found in *M. vulgare* reduces low density lipoprotein (LDL) oxidation and increases reverse cholesterol transport, thereby helping to prevent cardiovascular disease (29, 30)

Antimicrobial

- Ethanol extract of *M. vulgare* showed antibacterial activity against *Bacillus subtilis* and *Staphylococcus aureus* (31).
- Ethanol extract of *M. vulgare* roots showed in vitro inhibition of planktonic growth, biofilm formation and adherence of methicillin-resistant *Staphylococcus aureus* (MRSA) (32).

Chemoprotective

- *M. vulgare* methanolic extract 250ug/mL showed anti-tumorigenicity activity on human colorectal cancer cells (33) by upregulating pro-apoptotic nonsteroidal anti-inflammatory drug activated gene (NAG-1).



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White horehound

Marrubium vulgare

- *M. vulgare* essential oil in vitro showed inhibition of 100% HeLA human tumor cell lines in concentration of 500 ug/mL (34)
- Alcoholic extract of *M. vulgare* showed potent cytotoxic effect against breast carcinoma MCF7 cell line (35).

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