

---

# Sweet Clover

**Melilotus albus, Melilotus officinalis**

Annie Bazinet HTA, august 25-2020 thru october 6 2020, [info@dryadeherbo.com](mailto:info@dryadeherbo.com)

---



---

## Names:

*Albus*: Sweet Clover, Bokharat clover, white melilot

*Officinalis*: Yellow Sweet Clover, Mélilot Officinal, Gelber Steinklee, ribbed melilot, field melilot, cornilla real, corona regia, Hart's Clover, King's clover, Heartwort, Trèfle de cheval, Trèfle de mouche, Mirlilot, Honigklee, Ziegenkraut, Schabenklee, Mottenklee,

Both species are usable for therapeutics

Fabales Order, Bean Family (Fabacea), Papilionidea tribe, Clover tribe.

## Subtle Aspect

Melilotus loves « circulation », you will always find it near a road, a street, an intersection, railroad, river. Anywhere near circulation.

## Botany and Ecosystem

Melilotus is naturalized in North America, following its environment it can be an annual, a bisannual or a perennial plant that is often met on the roadside, in fields and waste fields. They prefer clay soils or saline soils. Very present in Europe, North America and China.

They are a non-lignous plant, with trifoliate, alternate, petiolate leaves. Each leaf has 2 lanceolate stipules. Each leaflet measures at most 3 cm in length and 2 cm in width, they have an oval shape, acuminate at the summit and the base. Edge of leaflet is finely serrated.

The stem is cylindrical and green, it's texture is finely wrinkled and glabrous.

Flowers present themselves in elongated racemes, they are about 7mm long and have a hairy calyx with 5 unequal teeth, deeply divided and the papilionidea corolla. They produce glabrous ovoid pods, obtuse at the top and with a very short point, brown when ripe.

Can be used for Copper Phytoremediation (3)

Care must be taken not to harvest in a contaminated area.

Adventice (Pioneer and « weeds ») and useful to pollinators



©2005 Luigi Rignanese above  
Maren Toom on pinterest on the right

## Parts used and Harvest

Harvest the flowering top, far from busy roads, preferably at the beginning of the flowering.

## TCM and Humor Energetics

Fairly bitter as a totum (whole flowering top), soft, cold and dry, aromatic.  
Relaxing, calming, decongesting (fluids, i.e. Lymph), Diluent for « humors »

Tropisms (where the plant works); liver, heart, intestines, nervous system and veins. warmth, air, body fluids.

TCM Organs (b): Liver, Heart, Lungs, Large Intestine (meridian)

Terrains: Sanguine, Choleric, Sulfuric or Hematogenic aggravations

## Properties

Antioxydant (like all plants)(2,5,8)  
Anti-inflammatory (5,8, b,c)  
    Vascular Anti-inflammatory(1,2,3)  
Vascular Tonic and Protector (1,c,d)  
Capillary vessels protector and tonic (1,3)  
Anti-Oedematous (a, d)  
Anti-HIV(6,)

Anti-tumoral (6,8,9)  
Lymphatic (a,b,c)  
Vulnerary (a,b,c)  
Calming (b) (inhibition of sympathetic nervous system)  
Pain killer (b,c,d)  
Hepatoprotector (7, c)  
Spasmolytic (b)

---

## Therapeutic uses

One recognizes melilotus from the sweet fragrance of their blossoms. Using the whole flowering top will yield a bitter infusion. If one uses the flowers only, the end result will have a slightly sweeter with a little bit of bitterness.

That sweet aroma is due to molecules called « coumarins ». These molecules can also be found in large quantities in *Hierochloe odorata* (Sweet grass) and in *Galium odoratum* (Sweet Woodruff)

Coumarins are found in other Fabaceae such as red clover and alfalfa but in much smaller quantities.

Melilotus is a fabulous decongestant. Be it a veinous or a lymphatic situation, it will help to put the fluids back in motion, thus helping to reduce pains, calm the nervous system and disperse heat accumulation.

As much as it has a direct effet on fluids themselves (blood, lymph, milk, etc. ) it also helps to reinforce the vessels that carry these fluids. It redirects and balances the body fluids, insuring an efficient distribution and re-establishes the good circulatory function, its greatest attribute.

Through enhanced circulation, it contributes to the proper functioning of all organs.

### **Antioxydant, Vascular Inflammation or Vascular Damage:**

Zhao GC et al. (1), have demonstrated that melilotus contributed to protect brain tissues from destruction as well as lower pro-inflammatory cytokines in rats that were given melilotus extract after an ischemia test. (This is a test where you restrict blood flow to brain, causing hypoxia and reperfusion impact. )

Sheik NA et al. (2) have demonstrated a better organ resistance in excessive iron situations. This causes more oxidative stress on the body, with a methanolic extract of a water extract.

Forte et al.(4) have observed retina improvement in diabetic patients. Diabetes generally causes capillary bed inflammation due to the elevated blood sugar levels. (Diabetic retinopathy)

In general, melilotus seems to modulate markers of inflammation or inflammation regulators : (5) (TIPE2 ; tumor necrosis factor-alpha-protein 8 like 2, NF-k-β; nuclear factor beta, TLR4: toll-like receptor 4, HO-1: heme-oxygenase 1, IκB: Inhibitor of kB kinase) Pro-



---

inflammatory mediators: interleukin-6, tumor necrosis factor alpha(TNF-a), myeloperoxidase (MPO), malondialdehyde (MDA) and superoxide dismutase (SOD)

In short, any chronic or spontaneous inflammation will benefit from melilotus. Any vascular inflammation, including arterosclerosis and atherosclerosis, or any individual with cardiac issues, diabetes, high inflammation, rosacea (skin) will also benefit from melilotus.

In 1915, Ellingwood reports similar uses, in particular when there is a feeling of a head that's too, nose bleed tendency, headaches and migraines linked to cerebral circulation.

**Vascular tonic:**

Action on the smooth muscles of blood vessels (a), augments venous debit and diminishes the capillary permeability. Reverses the vasoconstriction induced by adrenaline, stabilizes the erythrocytes membranes, diminishes the phagocytes activity and citrulline production.

Will help for :

Phlebitis and thrombophlebitis and their consequences, (a,b, )

Any vascular insufficiency: heavy legs(b), varicose veins(b,d), spider veins, hemorrhoids(d), night cramping in the legs, painful period.

Melilotus relaxes the excessive fullness in veins or lymph vessels, it allows rediffusion of fluids. (b)

**Lymphatic tonic**

Augments the lymphatic debit, speeds oedema resorption, wether chronic or seasonal (due to heat).

It will also help with postoperative or post trauma oedema, even if lymph nodes have been removed.

Ellingwood notes that melilotus will stimulate local circulation and is adapted to cases where there is great weakness or lack of vital energy.

Melilotus can be use internally or externally in a poultice, for swelling and inflammation.

---

### **Capillary bed tonic:**

Will be useful in all microcirculation weakness, at the skin level (rosacea), at the cerebral level or the renal level. Melilotus will help augment oxygenation in all irrigated tissues.

Very useful for congested circulation in the head, excess of heat in the head causing irritability, anxiety, head aches, insomnia.

### **Vulnerary**

Will favor healing when there is injury to the tissues, no matter from where the injury comes from ; operation, trauma, ulceration. This probably through its modulation of inflammation.

(c)

### **Pain killer: (d)**

Will be useful in congested circulation states, spasms, pains due to blood or fluid stagnation. David Winston approves of this use, he even says that in any « stabbing pain » we should consider melilotus. So any acute and sharp sensations of pain.

Winston also considers it to relieve sciatica, intense dysmenorrhea, headaches, neuralgias of all types : renal, optical, ovarian or any type of nerve inflammation. Of course he uses melilotus with other plants in that regard.

Holmes also recommends melilotus for many types of pain, adding to Winston's : otitis, acute stomach pain, acute rectum pain or acute bladder pain. What needs to be understood here is that melilotus action on pain is widely due to its ability to liberate the fluids, so they don't press on the organs, plus the action on the inflammation markers.

### **Hepatoprotective (7,c)**

Mice were injected with paracetamol and carbone tetrachloride, two known hepatotoxins, the test groups were receiving 50mg/kg and 100mg/kg doses of melilotus extract. Control groups were receiving sylimarin and nothing (negative control). The outcome was that hepatic enzymes in the blood flow were much lower in the melilotus groups. According to the authors, this confirmed melilotus' use in liver support treatments. The authors mention there a traditionnal use I have not found in eclectic or european tradition but I'll take it.

The authors of that study thought that this hepatoprotective action was due to the free radical buffering capacity of flavonoids and other phenolic components of the plant.

---

Paradoxically, and at the origin of the coumarin rejection; Since 1945, the FDA has classified Tonka bean, a flavorful, coumarin rich bean, as toxic for the liver, so outlawed its internal use. Scientists of the period were pointing to the infamous coumarins, but since then, the study's proceedings have been re-evaluated and it has been determined that nobody would ever consume enough Tonka bean to reproduce the results of the massive dosages that were inflicted onto dogs and cats. And thus, the liver toxicity would not be reproduced in a normal setting. (10) Tonka bean is still outlawed in the US.

The same train of thought has been applied to Cassia Cinnamon, which also has high coumarin content, but the study cited in #7, tells us that it is not a problem in physiological doses.

## Administration

### **Water extractions:**

Infusion: 1 tsp per cup of water, 1-3 cups per day (or 4 to 10g per dose, significantly higher)

According to Winston, the dried plant has a maximum efficacy before 6 months old.

Vapor bath (b); was renowned to lessen middle ear and sinus pain.

### **Ethanol (alcohol) extraction: (b,d)**

Macerate in 50% alcohol, ratio of 1:3

Winston says that to get the best of melilotus, you tincture from fresh that was left to wilt 12-24h.

0,5 to 3ml per dose, the mean in 1,5ml, 1 - 3x a day (tid).

### **Capsules of entire plant powder:**

dry completely, pulverize and encapsulate. (4-10g per day)

### **Salve (Oil extraction):**

According to Ellingwood a salve would be most useful for any kind of ulcerations,

### **Poultices**

Of the leaves and flowering tops, (c,d), will have a good effect on joint inflammation, on well defined pain in the abdomen when there is also swelling.

---

## Security & Contraindications

According to Rombi and Robert (a), the entire flowering tops has no acute or subacute toxicity up to 3g/kg of body weight and 300mg/kg/day for long term use.

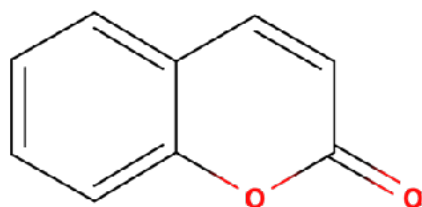
Same thing with Holmes (b), « very mild remedy with little chronic toxicity » .

In case of fungal infestation on the fresh plant, live or cut, we will see « dicoumarol » appear, a molecule that has an anti-coagulant (vitamin K inhibitor) activity. Melilotus insists on careful drying or speedy transformation making.

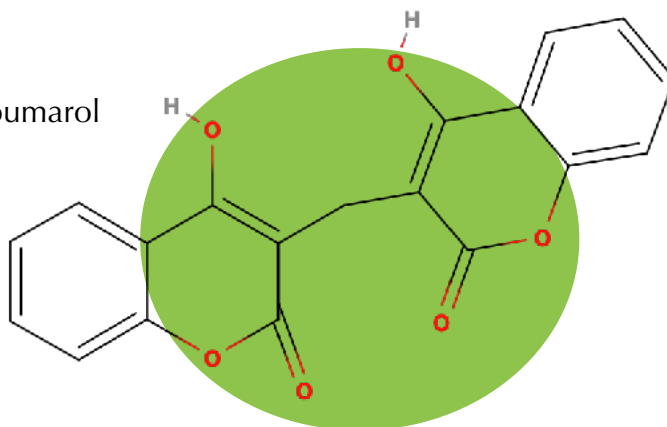
Dicoumarol is the molecular ancestor of the medication « Coumadin », and that is why people often make the association coumarin/ coumadin and bleeding problems. But, coumarin containing plants do not have an anti-coagulant effect in physiological doses. Confusion arises between single coumarin and dicoumarol and a too fast association leads us astray.

Dicoumarol is a dimer of coumarin molecules, which creates a peculiar molecular structure that has the ability to inhibit vitamin K, a vitamin strongly implicated in blood clotting, indicated in green on the picture. If that structure is absent, like in coumarin, you will only have the effects of coumarin and not dicoumarol.

single coumarin



dicoumarol



Very LARGE quantities MIGHT lead to blood fluidification, but in most people, physiological dosages will not have that effect.

While it is true that clotting problems appear in cattle that feed heavily on melilotus, one has to keep in mind that ruminant digestion involves fermentation, which causes the apparition of dicoumarol, which triggers clotting problems. Human digestion rarely involves fresh melilotus and involves no fermentation (when healthy).



---

## Constituents (a)

Polysaccharides:

Polyphénols:

Coumarins: melilotoside,

Flavonoids: apigenol, glycosides derivatives of kaempferol and quercétol,

Isoflavonoids: phenyl-3-chromane pterocarpane type, medicarpine, melitocarpane A-E,

Terpenoids:

Triterpenes: Saponosides et Genines on the oleanane structure: soyasapogenols B et E, melilotigenine, soyasaponine I, astragaloside VIII, wistariasaponine D, melilotus-saponine

## Combinations in literature

**For veinous tone, lymphatic return and anti-inflammatory aspect :** Gotu kola, Yarrow, Salvia miltiorrhiza, Red Vine, Horse Chestnut, Zanthoxylum americanum, Hawthorn...

## Conclusion

For our modern bodies, often riddled with a silent inflammation burden, Melilotus brings a mild, efficient and fortifying medicine. It favors healthy circulation and proper irrigation of all organs with a strengthening of the blood vessels themselves.

For any problems involving blood circulation, lymph circulation, acute pains and oedema, consider of this one!

Melilotus is very accessible, offers itself freely to us and is ripe with great qualities for our health. Another plant to rediscover.

---

## References

### Properties:

### Studies

1. Zhao GC, Yuan YL, Chai FR, Ji FJ. Effect of Melilotus officinalis extract on the apoptosis of brain tissues by altering cerebral thrombosis and inflammatory mediators in acute cerebral ischemia. *Biomed Pharmacother.* 2017;89:1346-1352. doi:10.1016/j.biopha.2017.02.109 <https://pubmed.ncbi.nlm.nih.gov/28320101/> consulté le 25 août 2020
2. Sheikh NA, Desai TR, Tirgar PR. Investigation into Iron Chelating and Antioxidant Potential of Melilotus officinalis in Iron Dextran Induced Iron Overloaded Sprague Dawley Rat Model. *Drug Res (Stuttg).* 2016;66(12):618-627. doi:10.1055/s-0042-113182 <https://pubmed.ncbi.nlm.nih.gov/27626608/> consulté le 25 août 2020
3. Han Y, Wu X, Gu J, et al. Effects of organic acids on the photosynthetic and antioxidant properties and accumulations of heavy metals of Melilotus officinalis grown in Cu tailing. *Environ Sci Pollut Res Int.* 2016;23(18):17901-17909. doi:10.1007/s11356-016-6920-x, <https://pubmed.ncbi.nlm.nih.gov/27255310/>, consulté le 25 Août 2020
4. Forte R, Cennamo G, Finelli ML, Bonavolontà P, de Crecchio G, Greco GM. Combination of flavonoids with Centella asiatica and Melilotus for diabetic cystoid macular edema without macular thickening. *J Ocul Pharmacol Ther.* 2011;27(2):109-113. doi:10.1089/jop.2010.0159 <https://pubmed.ncbi.nlm.nih.gov/21314440/> consulté le 25 août 2020
5. Liu MW, Su MX, Wang YH, Qian CY. Effect of Melilotus extract on lung injury via the upregulation of tumor necrosis factor- $\alpha$ -induced protein-8-like 2 in septic mice. *Mol Med Rep.* 2015;11(3):1675-1684. doi:10.3892/mmr.2014.2965 <https://pubmed.ncbi.nlm.nih.gov/25405912/> consulté le 25 août 2020
6. Zhang J, Di H, Luo K, et al. Coumarin Content, Morphological Variation, and Molecular Phylogenetics of Melilotus. *Molecules.* 2018;23(4):810. Published 2018 Apr 2. doi:10.3390/molecules23040810
7. Alamgeer, Nasir Z, Qaisar MN, et al. EVALUATION OF HEPATOPROTECTIVE ACTIVITY OF MELILOTUS OFFICINALIS L. AGAINST PARACETAMOL AND CARBON TETRACHLORIDE INDUCED HEPATIC INJURY IN MICE. *Acta Pol Pharm.* 2017;74(3):903-909.
8. Liu YT, Gong PH, Xiao FQ, et al. Chemical Constituents and Antioxidant, Anti-Inflammatory and Anti-Tumor Activities of Melilotus officinalis (Linn.) Pall. *Molecules.* 2018;23(2):271. Published 2018 Jan 29. doi:10.3390/molecules23020271
9. Musa MA, Cooperwood JS, Khan MO. A review of coumarin derivatives in pharmacotherapy of breast cancer. *Curr Med Chem.* 2008;15(26):2664-2679. doi:10.2174/092986708786242877
10. Coumarin, the illegal chemical causing Americans to miss out on a sweet treat. [Cassandra Lee – OSS Intern | 4 Jul 2017 https://www.mcgill.ca/oss/article/general-science/coumarin-illegal-chemical-causing-americans-miss-out-sweet-treat](https://www.mcgill.ca/oss/article/general-science/coumarin-illegal-chemical-causing-americans-miss-out-sweet-treat), consulté le 21 septembre 2020

### BOOKS:

- a. Le Dictionnaire des Plantes Médicinales, Max Rombi, Dominique Robert, 2015, Éditions Alpen, p.471 à 476
- b. The Energetics of Western Herbs, A Materia Medica Integrating Western and Chinese Herbal Therapeutics, vol. 2, Peter Holmes, 4th Edition, 2006, Snow Lotus Press, p528-530
- c. American Materia Medica, Therapeutics and Pharmacognosy (1915), Finley Ellingwood et John Uri Lloyd, Kissinger Publishing's Legacy Reprints, 9781162098067 p.398
- d. Publication de David Winston's Center for Herbal Studies, 12 juillet 2018 · Sweet Melilot (Melilotus officinalis, M. alba), [https://www.facebook.com/permalink.php?story\\_fbid=10156082660453692&id=139321718691](https://www.facebook.com/permalink.php?story_fbid=10156082660453692&id=139321718691), consulté le 21 septembre 2020

