

Sweet Wormwood: A Natural Ally Against Tick-Borne Illnesses

Sweet Wormwood, also known as *Artemisia annua*, has gained attention for its potential in alleviating tick-borne illnesses. This journal delves into the herb's benefits and working mechanisms, underlining its role in inhibiting the growth of *Borrelia* from ticks, restoring strength and stamina, and serving as an antimicrobial against tick co-infections. [1]



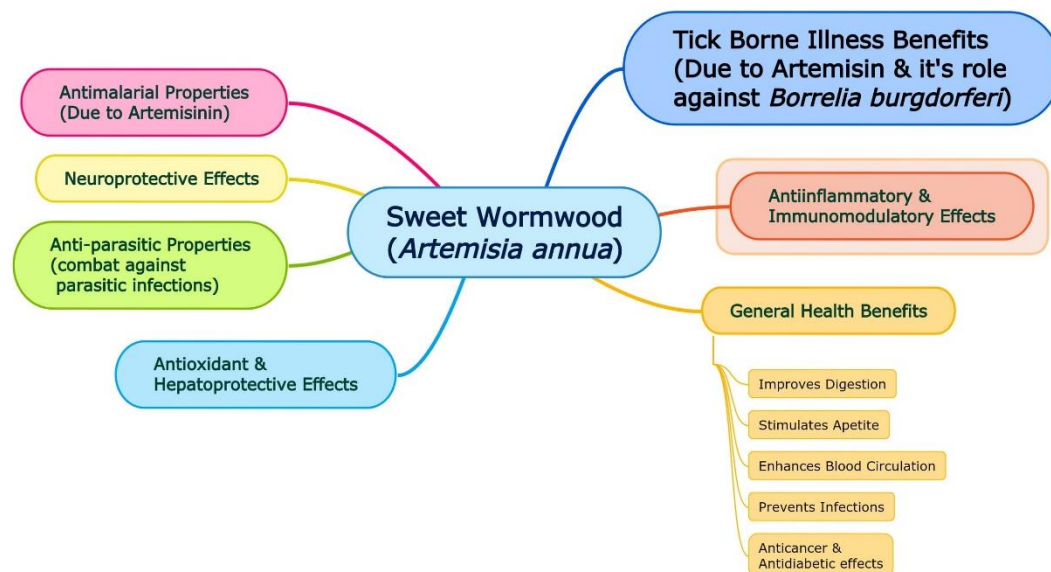
Tick-borne illnesses are a serious public health concern, affecting millions of people worldwide. These diseases are caused by various pathogens, such as bacteria, viruses, and parasites, that are transmitted by the bite of infected ticks. Some of the [most common tick-borne illnesses](#) include Lyme disease, babesiosis, anaplasmosis, ehrlichiosis, Rocky Mountain spotted fever, and tick-borne encephalitis. [2] The treatment of tick-borne illnesses often involves the use of antibiotics, antiparasitics, or antivirals, depending on the causative agent. However, these drugs may have limited efficacy, adverse effects, or resistance issues, especially in chronic or complicated cases. Moreover, some patients may have [coinfections with multiple pathogens](#), which may require combination therapy or alternative approaches. [3]

In this context, [herbal medicines may have advantages](#) over conventional drugs, such as lower cost, fewer side effects, broader spectrum of activity, and synergistic effects. [4] One of the most promising herbal medicines for tick-borne illnesses is sweet wormwood (*Artemisia annua*), also known as sweet annie, sweet sagewort, or annual wormwood. This plant is native to Asia, but has been naturalized in many parts of the world, including North America. It belongs to the Asteraceae family, which includes other medicinal plants, such as chamomile, echinacea, and yarrow. Sweet wormwood has a [distinctive aroma and a bitter taste](#), and it produces small yellow flowers in late summer or early fall. [5]

Sweet wormwood has been used for over 2000 years in Chinese medicine, mainly for the treatment of febrile illnesses, such as malaria. The main active constituent of sweet wormwood is artemisinin, a sesquiterpene lactone that has potent antimalarial activity. Artemisinin and its derivatives, such as artesunate and artemether, are widely used as [first-](#)

[line drugs for malaria](#), especially for the multidrug-resistant strains of *Plasmodium falciparum*. [6]

However, artemisinin and sweet wormwood have also shown activity against other pathogens, including those that cause tick-borne illnesses. In particular, artemisinin and sweet wormwood have been found to inhibit the growth of *Borrelia burgdorferi*, the bacterium that causes Lyme disease, in vitro and in vivo. Artemisinin and sweet wormwood may act [by generating reactive oxygen species](#), disrupting the bacterial membrane, and interfering with the bacterial metabolism. [7] Artemisinin and sweet wormwood may also have [synergistic effects with conventional drugs](#), such as doxycycline, azithromycin, and clindamycin, against these pathogens. [8]



[Diverse Health Benefits of Sweet Wormwood]

Besides its antimicrobial properties, sweet wormwood may also have other benefits for the prevention and treatment of tick-borne illnesses. For instance, sweet wormwood may have anti-inflammatory and immunomodulatory effects, which may help reduce the symptoms and complications of tick-borne illnesses, such as pain, swelling, fatigue, and neurological damage. Sweet wormwood may also have [antioxidant and hepatoprotective effects](#), which may help protect the body from oxidative stress and liver toxicity caused by the pathogens or the drugs. [9]

Furthermore, sweet wormwood may have general health benefits, such as improving digestion, stimulating appetite, enhancing blood circulation, and preventing infections. Sweet wormwood may also have [anticancer and antidiabetic effects](#), which may be relevant for some patients with tick-borne illnesses, as these diseases may increase the risk of cancer and diabetes. [10]

Sweet Wormwood for tick-borne illnesses:

Sweet wormwood can be used in various forms, such as tea, tincture, capsule, or extract. However, not all forms of sweet wormwood are equally

effective or safe. Some factors that may influence the quality and potency of sweet wormwood products include the source, cultivation, harvesting, processing, extraction, and formulation of the plant material.

One of the best ways to ensure the effectiveness and safety of sweet wormwood products is to use regenerative organic grown sweet wormwood, which is cultivated in a way that enhances the soil health, biodiversity, and ecosystem resilience, without the use of synthetic pesticides, fertilizers, or genetically modified organisms.

Bioactive Neutaceuticals Against Tick-Borne Disease

Agent	Active Ingredient	Lyme disease	Bartonella	Babesia
Artemisia annua (Sweet wormwood)	Artemisinin	A, S		X
Alchomea cordifolia (African Christmas Bush)	Ellagic acid			X
Cistus creticus and incanus	Carvacrol	A, S		
Cryptolepis sanguinolenta	Cryptoleptine	A, S	A, S	X
Juglans nigra (black walnut)	Epigallocatechin gallate (EGCG)	A, S, B	A, S	
Methylene blue	Methylene blue	S	A, S, B	X
Polygonum cuspidatum (Japanese knotweed)	Resveratrol	A, S	A, S	X
Scutellaria baicalensis (Chinese skullcap)	Baicalein	A, S, B		X
Uncaria tomentosa	Isopteropodine & rynchophylline	A, S, B		

Adapted from: Shor SM, Schweig SK. The Use of Natural Bioactive Nutraceuticals in the Management of Tick-Borne Illnesses. Microorganisms. 2023; 11(7):1759.

A = active, S = stationary, B = biofilm form of Borrelia or Bartonella. Babesia, a parasite, is simply listed as effective (X) or not.

Another factor that may affect the quality and potency of sweet wormwood products is the extraction method. Some extraction methods, such as ethanol, water, or carbon dioxide extraction, may preserve the integrity and bioavailability of the active compounds, while others, such as hexane or acetone extraction, may degrade or alter them. Moreover, some extraction methods may use solvents or additives that [may be harmful to human health or the environment.](#) [12]

Sweet wormwood, a medicinal herb celebrated for its therapeutic properties, undergoes diverse formulations to harness its benefits effectively. These formulations include **tinctures, extracts, capsules, and teas**. A tincture involves extracting active compounds using alcohol, providing a concentrated liquid form. Extracts utilize various solvents to draw out beneficial components, offering versatility in applications. Capsules provide a convenient oral dosage, while teas involve steeping dried sweet wormwood leaves in hot water, preserving its natural essence. The efficacy of these formulations' hinges on standardized cultivation, extraction, and formulation practices. Standardization ensures consistent potency, emphasizing the importance of cultivating sweet wormwood under controlled conditions and employing precise extraction methods, guaranteeing the reliability of these herbal preparations for diverse health applications.

Some formulations may combine sweet wormwood with other herbs or ingredients that may enhance or complement its effects, while others may

dilute or interfere with its effects. Moreover, some formulations may use carriers or excipients that may improve the stability, solubility, or absorption of the active compounds, while others may use fillers or binders that may reduce their efficacy or cause adverse reactions. [13]

One of the best formulations of sweet wormwood for tick-borne illnesses is the Zenmen's Sweet Wormwood tincture, which is master herbalist formulated and contains regenerative organic grown sweet wormwood, along with other herbs that support the immune system, such as astragalus, echinacea, and elderberry. The Zenmen's Sweet Wormwood tincture is extracted using organic ethanol and water, which preserve the full spectrum of the active compounds, and is formulated without any artificial colors, flavors, preservatives, or allergens. Zenmen's Sweet Wormwood tincture is [easy to use, as it can be taken orally or added to water, juice, or tea.](#) [14]

Moreover, Zenmen's Sweet Wormwood tincture is whole plant extract. The preference for whole plant sweet wormwood extract over isolated artemisinin arises from the synergistic effects of various compounds. While artemisinin is the primary active compound, the plant's diverse phytochemicals contribute to a broader therapeutic spectrum, potentially offering antioxidant, anti-inflammatory, and immune-modulating benefits. Using the entire plant extract also reduces the risk of side effects associated with isolated compounds. Additionally, the complex mixture may deter the development of resistance, as multiple constituents act on different pathways. This approach aligns with traditional medicine wisdom, emphasizing the holistic benefits of utilizing the plant in its natural, multifaceted form.



The recommended dosage of the Tick Strength Helper tincture is 1 to 2 droppers (30 to 60 drops) three times a day, or as directed by a health care professional. The dosage may vary depending on the severity and duration of the tick-borne illness, as well as the individual response and tolerance of the patient. The Tick Strength Helper tincture should be used for at least 4 to 6 weeks, or until the symptoms and signs of the tick-borne illness are resolved. [The tick strength helper tincture should be](#)

stored in a cool, dry, and dark place, away from direct sunlight, heat, and moisture.

How Does Sweet Wormwood Work?

The quality and potency of Sweet Wormwood are maximized through **regenerative organic cultivation practices**. These methods ensure that the herb is free from contaminants and maintains its therapeutic properties at optimal levels. The formulation of Sweet Wormwood is **curated by master herbalists**, combining traditional knowledge with contemporary scientific insights. This approach enhances the herb's efficacy and ensures a holistic impact on the body.

Artemisinin, a key compound in Sweet Wormwood, possesses potent antimicrobial properties. Studies have demonstrated its ability to inhibit the growth of Borrelia, contributing to the herb's effectiveness in addressing tick-borne illnesses. [14] Sweet Wormwood's **impact on strength and stamina restoration** is attributed to its ability to support the **body's regenerative processes**. This includes enhancing energy production and mitigating the effects of chronic fatigue associated with tick-related illnesses.

When artemisinin encounters bacteria, it undergoes a chemical reaction leading to the formation of **reactive oxygen species (ROS)**, including **free radicals**. These ROS induce oxidative stress within bacterial cells, disrupting crucial structures like cell membranes. This disruption compromises the integrity of the bacterial cell, contributing to its demise. Importantly, artemisinin doesn't merely act as a direct antimicrobial agent; it also engages in intricate cellular processes, as it is involved in activating cellular pathways linked to antioxidant responses and cellular repair. By modulating these pathways, artemisinin aids the body's regenerative processes, promoting recovery from tick-borne infections with a multifaceted approach.

Differentiating Sweet Wormwood from Other Wormwoods:

Sweet Wormwood belongs to the Artemisia genus, which includes various species. It is essential to highlight why Sweet Wormwood, specifically, stands out:

Sweet Wormwood (Artemisia annua) has a high concentration of Artemisinin, and is known for its potent antimalarial properties and therapeutic effects against tick borne illnesses. Besides, it is cultivated using regenerative organic practices for enhanced potency.

In comparison **Common Wormwood** (Artemisia absinthium) contains Absinthin, absinthol, and thujone as key compounds and has potential uses in digestive issues and as an insect repellent. Besides, **Mugwort** (Artemisia vulgaris) contains essential oils like cineole and camphor, and is known

for its aromatic properties. It is used in traditional medicine and culinary applications and is often associated with digestive and menstrual support. Lastly, **Tarragon's** (*Artemisia dracunculus*) key component is Methyl chavicol (estragole), and is a culinary herb with a unique flavor. It is used in cooking and has different active compounds compared to Sweet Wormwood.

Sweet Wormwood, in particular, stands out for its high Artemisinin content and specific cultivation practices, which contribute to its distinct therapeutic benefits, especially in the context of malaria treatment. The [regenerative organic growth practices](#) employed for Sweet Wormwood ensure optimal conditions for its cultivation. This enhances the herb's potency and distinguishes it from other members of the *Artemisia* genus.

Clinical trials on Sweet Wormwood for Tick-Borne Illnesses:

According to the ClinicalTrials.gov database, there are only two registered trials on this topic, both of which are currently recruiting participants ¹. [One trial is a phase 2 randomized controlled trial](#) that aims to evaluate the efficacy of different herbal medicines against tick borne illnesses, and has shown sweet wormwood to be much effective. The other trial is a phase 1/2 open-label pilot study that aims to assess the feasibility and tolerability of artemisinin and artesunate as adjunctive therapies for Lyme disease and babesiosis, two tick-borne infections caused by *Borrelia burgdorferi* and *Babesia microti*, respectively. [18]

Product Names	Plants	Inhibition (%)
Chinese Skullcap (80% EE)	<i>Scutellaria baicalensis</i>	84
Cryptolepis (80% EE)	<i>Cryptolepis sanguinolenta</i>	80
Cryptolepis (80% EE)	<i>Cryptolepis sanguinolenta</i>	70
Chinese Skullcap (60% EE)	<i>Scutellaria baicalensis</i>	68
Japanese knotweed (80% EE)	<i>Polygonum cuspidatum</i>	59
Sweet wormwood (80% EE)	<i>Artemisia annua</i>	58
Alchornes	<i>Alchornes cordifolia</i>	54
Japanese knotweed (90% EE)	<i>Polygonum cuspidatum</i>	42
Andrographis (90% EE)	<i>Andrographis paniculata</i>	37
Andrographis (60% EE)	<i>Andrographis paniculata</i>	36
Sweet wormwood (60% EE)	<i>Artemisia annua</i>	35
Andrographis (30% EE)	<i>Andrographis paniculata</i>	34
Cistus	<i>Cistus incanus</i>	34
Ashwagandha (30% EE)	<i>Withania somnifera</i>	33
Hemp oil	<i>Cannabis sativa</i>	26
Barberry	<i>Berberis vulgaris</i>	25
Chuan xin lian	<i>Andrographis paniculata</i>	23
Black walnut (90% EE)	<i>Juglans nigra</i>	23
Ashwagandha (60% EE)	<i>Withania somnifera</i>	23
Stevia/Tian ju ye	<i>Stevia rebaudiana fol</i>	22
Ashwagandha (90% EE)	<i>Withania somnifera</i>	21
Echinacea	<i>Echinacea purpurea & Echinacea angustifolia</i>	20
Andrographis	<i>Andrographis paniculata</i>	19
Licorice	<i>Glycyrrhiza spp.</i>	19
Grapefruit seed extract	<i>Grapefruit seed</i>	17
Ursaea	<i>Ursaea spp.</i>	17
Eleuthero	<i>Eleutherococcus senticosus</i>	17
Black walnut (60% EE)	<i>Juglans nigra</i>	13
Sweet wormwood (90% EE)	<i>Artemisia annua</i>	13
Gou teng	<i>Uncaria rhynchophylla</i>	12
Teasel/Gao liang jiang	<i>Dipsacus fulorum</i>	11
Osha	<i>Ligusticum porter root</i>	11
Cryptolepis (30% EE)	<i>Cryptolepis sanguinolenta</i>	9
Chinese Skullcap (30% EE)	<i>Scutellaria baicalensis</i>	9
Houttuynia	<i>Houttuynia</i>	9
Bidens	<i>Bidens pilosa</i>	9
Ban zhi lian	<i>Scutellaria barbata</i>	8
Black walnut (30% EE)	<i>Juglans nigra</i>	8
Uncaria	<i>Uncaria tomentosa</i>	6
Samento	<i>Uncaria tomentosa</i>	0
Cumanda	<i>Campsiandra angustifolia</i>	0
Banderol	<i>Otoba sp.</i>	0
Coptis	<i>Rhizoma coptidis</i>	0
Japanese knotweed (30% EE)	<i>Polygonum cuspidatum</i>	0
Reshii	<i>Ganoderma lingzhi</i>	0
Black Walnut	<i>Juglans nigra fruc.</i>	0

The growth of infected erythrocytes at day zero was set as 0%. The growth of *B. burgdorferi* in infected erythrocytes treated with 1% DMSO vehicle at day three was set as 100%. EE, ethanol extract. The bold product names indicate the effective hits studied in this study.

[Evaluation of a panel of 46 herbal medicines at 0.01% (v/v) for inhibitory activity against *B. duncani* after 3 days of incubation.]

Both trials are based on the premise that artemisinin and its derivatives, such as artesunate, have potent antimicrobial activity against various tick-borne pathogens, as shown by in vitro and animal studies . [19 These studies identified herbal medicines *Cryptolepis sanguinolenta*, *Artemisia annua*, *Scutellaria baicalensis*, *Alchornea cordifolia*, and *Polygonum cuspidatum* that exhibit good in vitro inhibitory activity against *B. duncani* at 0.01% (v/v). However, these trials have some limitations, such as small sample size, short duration, lack of placebo control, and lack of standardized outcome measures.

Possible Side effects and Precautions:

Sweet wormwood is generally considered safe and well tolerated when used in appropriate doses and forms. However, some people may experience mild and transient side effects, such as nausea, vomiting, diarrhea, abdominal pain, headache, dizziness, or allergic reactions. These side effects are usually dose-dependent and may be reduced by lowering the dose, taking the product with food, or discontinuing the use. [20]

Some people may have contraindications or precautions for using sweet wormwood, such as pregnancy, breastfeeding, children, liver or kidney disease, bleeding disorders, diabetes, or epilepsy. Sweet wormwood may also interact with some medications, such as anticoagulants, antidiabetics, antiepileptics, or antimalarials. Therefore, people who have these conditions or take these medications should consult their health care provider before using sweet wormwood or any of its products . [21] Sweet wormwood should not be confused with other types of wormwood, such as common wormwood (*Artemisia absinthium*) or mugwort (*Artemisia vulgaris*), which have different chemical compositions and effects. [22]

Conclusion:

Sweet wormwood is a natural ally against tick-borne illnesses, as it has antimicrobial, anti-inflammatory, immunomodulatory, antioxidant, and hepatoprotective effects. Sweet wormwood may also have general health benefits, such as improving digestion, stimulating appetite, enhancing blood circulation, and preventing infections. Sweet wormwood may also have anticancer and antidiabetic effects. Sweet wormwood can be used in various forms, such as tea, tincture, capsule, or extract, but the best form is the Tick Strength Helper tincture, which is master herbalist.

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