

FC-Cidal™

Herbs, spices and botanical preparations often exhibit antimicrobial properties due to a wide array of terpenoid and polyphenolic compounds. Indeed, culinary herbs have long been used to control pests and food-borne yeasts and molds in the context of food safety.⁽¹⁾

Artemisia dracunculus (Tarragon). A culinary herb yielding a characteristic aromatic oil. The essential oil of tarragon yields a complex mixture of almost 50 different components. The most potent antibacterial constituents include anisaldehyde, paracymene, eugenol, limonene, linalool, menthol, cisocimene, alpha phellandrene, alpha pinene and beta pinene.⁽¹⁾ The essential oil of tarragon inhibited growth of *E. coli*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Streptococcus faecalis* and *Yersinia in vitro*. In addition, extracts of tarragon inhibited iron ascorbate-induced lipid peroxidation of microsomes prepared from human lymphoblastic cells indicating its antioxidant potential.⁽²⁾

Sida cordifolia (Country mallow). *Sida cordifolia* has been used in India since ancient times. It contains triglycerides, phytosterols, oleoresin and alkaloids, such as quinazoline alkaloids, asparagine, but no tannins.^(3,4) A low level of ephedrine was reported (0.085%). However, at this level, one capsule of FC-Cidal™ would contain negligible amounts of ephedrine (approximately 4 mcg). Phenylamine, tryptamine derivatives, vasicinonene, vasicine and vasicinol have also been reported.^(3,4) In addition, the leaves contain soluble gums (mucilages) that can act as demulcents. *Sida cordifolia* was shown to possess antibacterial and antifungal properties in experiments performed with rats.⁽³⁾

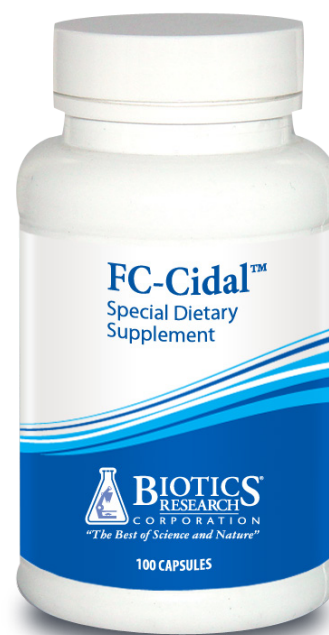
Tinaspora cordifolia (Guduchi). This herb has also been used traditionally in India. It contains bitter substances, giloin (a glycoside), gilenin, gilosterol and tinosporine.⁽⁵⁾ Ethanol extracts of *T. cordifolia*, in combination with several other herbs, had a minimal inhibitory concentration (MIC) of 1 mg/ml when tested *in vitro* against *Entamoeba histolytica*.⁽⁶⁾ Using an *in vitro* assay system with *Candida albicans* as the test organism, the activity of rat macrophages was increased by the administration of *T. cordifolia* at a level of 100 mg/kg.⁽⁷⁾

Equisetum arvense

(Horsetail). In addition to a high percentage of silicates, horsetail contains a variety of polyphenols, such as agigenin and luteolin glycosides. These flavones are typical of American and Asian species, but not the European *Equisetum* species.⁽⁸⁾ This herb also contains quercetin, and more unusual polyphenolics, such as genkwanin and progenkwanin glycosides. Horsetail also contains sterols, such as beta sitosterol and campesterol as primary sterol constituents.⁽⁹⁾ The antimicrobial activity of horsetail extracts has been reported.⁽¹⁰⁾ Extracts are reported to stimulate flow through the ureters.⁽⁸⁾ and they have been used as a component of herbal teas and herbal mixtures.

Olea europaea (Olive leaf). Various flavonoids and their glycosides have been isolated from olives and olive leaves, such as apigenin, luteolin, rutin and quercetin.⁽¹¹⁾ Oleuropein, a bitter principle of olives, is a glucoside and phenolic ester of elenolate, which is a multifunctional monoterpene. *In vitro* studies demonstrated that elenolate can inhibit several viruses.⁽¹²⁾ Furthermore, olive phenolic compounds inhibited the growth of spore-forming bacteria⁽¹³⁾ and *Staphylococcus aureus*.⁽¹⁴⁾ Isolated flavonoids from olives, as well as olive extracts, inhibited the classical complement pathway assayed by the hemolysis of erythrocytes. Therefore olive polyphenols may help balance inflammatory mechanisms.⁽¹⁵⁾

Thymus vulgaris (Thyme). An aromatic culinary herb, thyme has long been used as a seasoning and food preservative.⁽¹⁶⁾ Thyme contains 1-2.5% as an aromatic oil enriched in monoterpenes. Thymol content



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of thyme oil can be 30 to 70% and carvacrol content ranges between 3 and 15%. P-cymene, limonene and other terpenes are minor constituents. Thymol is an antimicrobial agent. Volatile constituents of the aromatic oil of thyme inhibited the growth of seven different gram positive and gram negative bacteria.⁽¹⁷⁾ Thyme also contains several pol phenolic compounds, such as eriodictyol and polyphenolic biphenyls, that inhibited superoxide anions and microsomal membrane lipid peroxidation induced by iron oxidation.⁽¹⁸⁾ In studies of lipid peroxidation in egg yolk, chicken liver, and muscle from mature chickens, the essential oil of thyme was found to be inhibitory in all of these systems.⁽¹⁹⁾ Thymol is contraindicated in enterocolitis, cardiac insufficiency and pregnancy.

Tabebuia avellandae (Pau D'Arco, LaPacho). This tropical tree is native to Brazil, where its inner bark has a long history of use among indigenous people there. One of the active substances is lapachol, a naphthoquinone that typically accounts for 2-7 % of the content. The tricyclic derivative of lapachol and beta lapachone, functions as an activator of the DNA unwinding enzyme, of topoisomerase I, which is required for DNA repair. However, lapachol does not itself exhibit this activity.⁽²⁰⁾ Lapachol exhibited very low activity in vitro with blood forms of the malarial parasite, Plasmodium falciparum.⁽²¹⁾ The antibacterial and antifungal activities of lapachol and lapachone have been compared.⁽²²⁾ An early clinical study of lapachol failed to produce a beneficial effect, because of the inability to obtain sufficiently high blood levels (more than 30 mcg/ml) and mild side effects that included antivitamin K activity and anticoagulant effects.⁽²³⁾

Product Adjuncts: **A.D.P.®, Lactozyme®, BioDophilus-FOS™**

References

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Supplement Facts

Serving Size: 1 Capsule

	Amount Per Serving
Proprietary Blend	500 mg
French Tarragon (<i>Artemisia dracunculus</i>) (leaf) *	
Indian Tinospora (<i>Tinospora cordifolia</i>) (stem & root) *	
Horsetail (<i>Equisetum arvense</i>) (whole herb) *	
Thyme (<i>Thymus vulgaris</i>) (leaf) *	
Pau D' Arco (<i>Tabebuia impetiginosa</i>) (inner bark) *	
Stinging Nettle Extract (<i>Urtica dioica</i>) (root) *	
Olive (<i>Olea europaea</i>) (leaf) *	

* Daily Value not established

Other ingredients: Capsule shell (gelatin and water), cellulose and magnesium stearate (vegetable source).

This product is gluten, dairy and GMO free.

RECOMMENDATION: One (1) capsule two (2) times each day as a dietary supplement or as otherwise directed by a healthcare professional.

CAUTION: Not recommended for pregnant or lactating women.

KEEP OUT OF REACH OF CHILDREN

Store in a cool, dry area.
Sealed with an imprinted safety seal for your protection.

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