Candida SAP

Antifungal and immune-boosting therapy for* Candida *overgrowth

Candida is a type of yeast normally found on the skin and in the mouth, vagina, and intestinal tract. It is ubiquitous in our environment, and causes negative health problems in cases where the immune system is weak, leading to *Candida* overgrowth or candidiasis. The incidence of this condition is increasingly due to the growing population of immunocompromised patients, including individuals who are overprescribed antibiotics; individuals with diabetes, HIV/AIDS, and solid tumours or hematological malignancies receiving stem-cell therapy; as well as transplant recipients and people undergoing antacid therapy. **Candida SAP** contains antifungal and immune-boosting substances to help the body control the growth of *Candida* in the body and prevent future outbreaks of candidiasis.

ACTIVE INGREDIENTS

Each non-GMO vegetable capsule contains:

Odourless garlic (*Allium sativum*) bulb extract, 1% allicin	150 mg
Berberine HCL	25 mg
Oregano (*Origanum vulgare*) leaf extract, 30% carvacrol	100 mg
Selenium (from selenomethionine)	50 mcg
Calcium caprylate	150 mg
Magnesium caprylate	100 mg
Zinc caprylate	20 mg

Other ingredients: Potassium caprylate (50 mg), vegetable magnesium stearate, and silicon dioxide in a vegetable capsule composed of vegetable carbohydrate gum and purified water.

This product is non-GMO and vegan friendly.

Contains no: Gluten, soy, wheat, corn protein, eggs, dairy, yeast, citrus, preservatives, artificial flavour or colour, or sugar.

Candida SAP contains 90 or 180 capsules per bottle.

DIRECTIONS FOR USE

Adults: Take 2 capsules twice daily or as directed by your healthcare practitioner. If you are taking supplements containing iron, zinc, calcium, or copper, take this product a few hours after them. Consult a healthcare practitioner for use beyond 4 weeks.

SUGGESTED THERAPY

We recommend using these products while on **Candida SAP** for a better therapeutic result:

- **ProBio SAP**—1 capsule in the morning, 1 capsule in the evening.
- **Liver SAP**—1 capsule in the morning, 1 capsule in the evening.
- **Trifibe SAP**—1 dosage in the morning, 1 dosage in the evening.

INDICATIONS

Candida SAP helps support the treatment and prevention of multiple species of *Candida* overgrowth in the oral cavity, gastrointestinal tract, vagina, as well as the skin and nails.

CAUTIONS AND WARNINGS

Consult a healthcare practitioner if symptoms persist or worsen; if you are taking blood thinners or protease inhibitors; if you have a history of non-melanoma skin cancer; or if you have diabetes, liver disease, hypotension, or leucopenia.

CONTRAINDICATIONS

Do not use if you are pregnant or breastfeeding. Discontinue use if you experience gastrointestinal upset. Discontinue use and seek immediate medical attention if you experience dizziness, confusion, muscle weakness or pain, abnormal heartbeat, and or difficulty breathing.

KNOWN ADVERSE REACTIONS

Hypersensitivity (e.g. allergy) has been known to occur; in which case, discontinue use.

PURITY AND CLEANLINESS

All ingredients listed for all **Candida SAP** lot numbers have been tested by an ISO 17025–accredited third-party laboratory for identity, potency, and purity.

Scientific Advisory Panel (SAP): adding nutraceutical research to achieve optimum health

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Invasive mycoses are life-threatening opportunistic infections and have emerged as a major cause of morbidity and mortality in critically ill patients.[1] *Candida albicans* is a dimorphic yeast-like fungus[2] that is the most common cause of opportunistic infection in humans, as well as the 4th leading cause of nosocomial infections.[3] Until recently, *C. albicans* was by far the predominant species, causing up to two-thirds of all cases of invasive candidiasis. However, the appearance of non-*albicans* drug-resistant species, such as *C. glabrata* and *C. krusei*, with reduced susceptibility to commonly used antifungal agents, has become a recent trend.[1][4]

Candida overgrowth can occur at a number of locations in the body, including within the oral cavity, esophagus, intestines, vagina, and on the skin and nails. Despite the fact that *Candida* is ubiquitous in our environment and can be identified as a commensal organism in up to 80% of healthy individuals, a small percentage of people develop infection. Local risk factors for oral candidiasis include salivary gland hypofunction (e.g. Sjögren's syndrome), and dental prostheses.[1] This condition often causes symptoms of local discomfort, altered taste sensation, and dysphagia, which may lessen nutritional intake[1] and further exacerbate immunosuppression. Oropharyngeal candidiasis may also lead to esophageal candidiasis, a more invasive form of infection with the potential for systemic spread and sepsis.[1] In immunocompromised individuals, it can pass through the gastric mucosa and become disseminated, often resulting in death.[3]

Conditions predisposing to *Candida* overgrowth include diabetes mellitus,[5] HIV/AIDS,[1] pregnancy,[5] radiation therapy, pharmacological immunosuppression (including systemic and topical corticosteroid therapy), broad-spectrum antibiotic therapy, and the two extremes of age.[1][5] Antacid therapy has also been identified as a risk factor; colonization of the duodenum and jejunum has been observed after only 4 weeks of cimetidine therapy.[6] Currently, the most common pharmacological antifungal treatments include amphotericin B (Amp B), nystatin, and the azoles (e.g. clotrimazole, fluconazole, etc.).[3]

CAPRYLIC ACID

Fatty acids are widely distributed in foods, and play crucial roles in many physiologic processes, including energy metabolism, cell structure, and signalling.[7] In an in vitro study comparing the antifungal activities of nine different fatty acids, caprylic acid was found to have significant antifungal activity, including complete inhibition of spore germination.[7]

GARLIC (*Allium sativum*)

Garlic has been used extensively as a natural treatment for immune enhancement, blood glucose control, and cardiovascular health.[8] An aqueous garlic extract (AGE) was tested against 133 multidrug-resistant microorganisms, including Gram-positive and Gram-negative bacterial isolates and 10 species of *Candida* in vitro.[8] AGE demonstrated significant anticandidal activity as determined by zones of growth inhibition, and was comparable to ciprofloxacin and fluconazole against *Candida* and both Gram-positive and Gram-negative bacteria, showing that AGE has a broad spectrum of antimicrobial activity as well as a wide therapeutic window.[8] In another study with streptozotocin-induced diabetic rats infected with *C. albicans*, garlic extract administration was found to significantly improve *C. albicans* infection.[9]

OREGANO (*Origanum vulgare*)

Oregano has a long history of use as a food-flavouring agent, and has demonstrated antifungal activity that has been attributed to its high content of phenolic compounds such as carvacrol and thymol.[2][10][11] In a study comparing *Origanum* oil versus an isolate of carvacrol, both preparations demonstrated anticandidal activity comparable to nystatin and amphotericin B, and *Origanum* oil completely inhibited the growth of *C. albicans* when administered at 0.25 mg/ml.[2] In addition, *Origanum* oil and carvacrol exhibited dose-dependent suppression of *C. albicans* germination and mycelial growth with both fungistatic and fungicidal activity.[2] Carvacrol has also been identified as the active ingredient in herbal preparations for dental caries and periodontal disease.[11]

BERBERINE

Berberine is an isoquinoline alkaloid present in a variety of plant species including *Hydrastis canadensis, Coptis chinensis, Berberis aquifolium,* and *Berberis vulgaris.*[12] Berberine is well-known for its use as an antimicrobial and has been shown to have significant antimicrobial activity against bacteria, fungi, parasites, helminths, and viruses.[12] Berberine has also been researched as a treatment for multidrug-resistant *E. coli*.[13] Five multidrug-resistant (MDR) STEC/EPEC and five MDR ETEC isolates from yaks with hemorrhagic diarrhoea were selected for the study.[13] Antibacterial activity of berberine was evaluated, and researchers concluded that berberine may be a good antibacterial treatment against MDR *E. coli*.[13] Preclinical studies have demonstrated the strong antifungal activity of berberine both in vitro and in vivo.[3][14] Application of this compound to a cutaneous *C. albicans* infection suppressed symptoms and accelerated elimination of the yeast from the injection site.[14]

Three groups of extracellular enzymes that are secreted by *C. albicans* have been identified:

1. Secreted aspartyl proteinases (SAPs), which are enzymes that facilitate *C. albicans* adherence to many host tissues. High levels of SAPs have been directly correlated to candidal virulence.[14]
2. Phospholipase B enzymes, which are claimed to play a pathogenic role in fungal infections.
3. Lipases.

A study looking to elucidate a possible mechanism of berberine's anticandidal action found it to have inhibitory activity against SAPs in vitro.[14] Another preclinical study evaluated the synergistic combination of berberine hydrochloride and fluconazole in the treatment of fluconazole resistant *Candida albicans* isolates.[15] The study results showed that that berberine hydrochloride + fluconazole exerted synergistic effects to increase fluconazole sensitivity by regulating multiple targets in fluconazole -resistant *C. albicans*.[15]

Amphotericin B (Amp B) is a commonly used drug for fungal infections.[3] Because it is poorly absorbed, high doses must be used, often leading to severe side effects such as renal damage.[3] A 2005 study of disseminated candidiasis in mice found that the combination of a single dose of Amp B with berberine had the same anticandidal activity as four times the same Amp B dose. Furthermore, a single dose of Amp B offered almost no protection against the disease. According to these data, the clinical dose of Amp B could potentially be reduced by more than 75% if used in combination with berberine, which has been shown to have a high therapeutic window in mice.[3]

SELENIUM

Selenium (Se) is an essential dietary nutrient that is most commonly recognized as a component of the antioxidant glutathione peroxidase, an enzyme that protects the immune system via its free-radical quenching activity.[16] Selenium also reduces hydrogen peroxide, the byproduct of the catalyzation of the superoxide free radical to oxygen, and other peroxidases to glutathione peroxidase.[17] Selenium's involvement in immunity is not limited to its function in glutathione metabolism; this mineral is also incorporated into selenoproteins in the body which stimulate T-cell development and activation.[18] In addition, selenium plays a key role in maintaining innate immunity. Neutrophils in selenium-deficient individuals lose their candidacidal activity, engulfing but not killing *C. albicans*.[19]

Selenium supplementation in AIDS patients is especially important as deficiency has been observed to develop over the course of the disease, with lower selenium blood concentrations correlating to higher AIDS mortality.[6] Selenium status in combination with *Candida* overgrowth also has important implications on heart health. *Candida* interferes with the uptake of CoQ_{10} in the intestines,[6] leading to lower levels of this compound in the body, a condition that has been linked to cardiomyopathy. Selenium not only indirectly prevents *Candida* overgrowth, but acts via its role in glutathione to prevent the oxidation of CoQ_{10}.[6]

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