



Holy Basil (*Ocimum sanctum*, *Ocimum tenuiflorum*)

Common Indications:

- Stress adaptogen; modifies the impact of cortisol response on the brain, cortisol release and immunity.
- Anxiety & Depression
- Radiation protection
- Promotes glutathione, Antioxidant protection, Detoxification
- Gastroprotective,
- Cholesterol benefit, reduce lipid peroxidation
- May help improve blood sugar regulation.
- Anti-inflammatory (COX-2 inhibitor).
- Cancer prevention.

General Comments:

Holy basil has been a staple in Ayurvedic medicine for more than 5,000 years. Basil has been used as both an herb in food preparation as well as an essential oil. Within Ayurveda, Holy Basil, also known as Tulsi, is known as “Mother Medicine of Nature” and “The Queen of Herbs,” and is revered as an “elixir of life” that is without equal for both its medicinal and spiritual properties.² Holy basil has been recommended as a treatment for a range of conditions including anxiety, cough, asthma, diarrhea, fever, dysentery, arthritis, eye diseases, otalgia, indigestion, hiccups, vomiting, cardiac and genitourinary disorders, back pain, skin diseases, ringworm, and malaria.²⁻⁵

Benefits & Mechanism of Action:

Adaptogen

Holy basil as an adaptogen works to help balance the body's stress response, reduce excessive cortisol production.¹ The ability of holy basil to reduce chronic stress lends impact on other systems resulting in effects on glucose, cholesterol, and cognition.

Under experiential conditions imposed during animal studies, Holy Basil has been shown to enhance aerobic metabolism, improve aerobic capacity, reduces oxidative tissue damage and normalizes many physiological and biochemical parameters caused by physical stressors. Noise induced stress responses have been modified by use of Holy Basil in experimental animals, leading to enhancement of neurotransmitter and oxidative stress levels in discrete brain regions along with improved immune, ECG and corticosteroid responses.⁶⁻⁹

In a 6-week, randomized, double-blind, placebo-controlled human study, Holy Basil significantly improved general stress scores, sexual and sleep problems and symptoms such as forgetfulness and exhaustion.¹⁰

Mood & Cognition

Holy Basil possess anti-anxiety and anti-depressant properties,¹¹⁻¹³ with effects comparable to diazepam and antidepressants drugs.¹⁴⁻¹⁵ Memory and cognitive function may be enhanced as demonstrated in animal studies, and also protects against aging-induced memory deficits.¹⁶⁻¹⁸ Human studies show reduction in depression and anxiety with use of Holy Basil.¹⁹

Gut Health

Holy Basil's has shown anti-ulcerogenic activity in animal studies. In an acetic acid-induced chronic ulcer model it was found that holy basil decreased the incidence of ulcers and also enhanced the healing of ulcers. Holy basil significantly reduced free and total acidity while increasing mucin secretion by 34.6%. The anti-ulcer effect of holy basil may be due to its cytoprotective effect rather than antisecretory activity making it an effective therapeutic agent against peptic ulcer disease.²⁰

Glucose and cholesterol

Holy basil extracts have been demonstrated in placebo controlled trials to significantly reduce fasting and postprandial blood glucose levels. Fasting blood glucose fell by 21.0 mg/dl, and postprandial blood glucose fell by 15.8 mg/dl, representing reductions of 17.6%.²³ The ursolic acid component of Holy Basil works to reduce COX-2 giving holy basil an antioxidant property that reduces lipid peroxidation.²⁵

Antioxidant & Detoxification

Holy basil has a high content of phenolic compounds and anti-oxidant properties.²⁸⁻²⁹ Laboratory studies have shown that Holy Basil protects against toxic chemical-induced injury by increasing the body's levels of glutathione and enhancing the activity of anti-oxidant enzymes such as superoxide dismutase and catalase, which protect cellular organelles and membranes by mopping up damaging free radicals caused by lack of oxygen and other toxic agents.³⁰⁻³² Enhancing the activity of liver detoxification enzymes of cytochrome P450 system, increasing safe excretion of toxic chemicals.³³

The use of Holy Basil may prevent liver, kidney and brain injury by protecting against the genetic, immune and cellular damage caused by pesticides, pharmaceuticals and industrial chemicals. Studies show its ability to protect against toxins: butylparaben,³⁴ carbon tetrachloride,³⁵ copper sulfate³⁶ ethanol,³⁷ pesticides such as rogor,³⁸ chlorpyrifos,³⁹ endosulfan⁴⁰ and lindane.⁴¹ Toxicity from pharmaceuticals drugs has also been

demonstrated including: acetaminophen,⁴² meloxicam,⁴³ paracetamol,⁴⁴ haloperidol⁴⁵ and anti-tubercular drugs.⁴⁶

Cancer

Cancer prevention is served by Holy Basil's ability to reduce DNA damage caused by toxic compounds.⁴⁷ It has been shown to induce apoptosis in precancerous and cancerous cells, thereby reducing the growth of experimental tumors and enhancing survival.⁴⁸⁻⁴⁹

Radiation protection

Support for cancer patients is seen thru holy basil's ability to reduce side effects as it mitigates the oxidative effects of radiation treatments.⁵⁰ Study of Holy Basil (*Ocimum sanctum* Linn) and its water soluble flavonoids, orientin and vicenin protects experimental animals against the radiation-induced sickness and mortality at nontoxic concentrations.⁵¹ Studies of tumor bearing mice have shown that these flavonoids selectively protect the normal tissues against the tumoricidal effects of radiation. Mechanistic studies have indicated that free radical scavenging, antioxidant, metal chelating and anti-inflammatory effects may contribute toward the observed protection.⁵²⁻⁵⁵

Dose: 400-800mg daily of a standardized extract.

Standardization:

- Holy basil supplements should be standardized to contain 1.0 - 2.5% ursolic acid; supercritical extracts contain a minimum of 7-11% eugenol and 4% caryophyllene; hydroethanolic extracts contain 0.7-4.0% triterpenic acids, including ursolic and oleanolic acids; steam distilled extracts contain a minimum of 40% eugenol and 15% caryophyllene.

Cautions & Side Effects:

- Holy basil has been reported to be safe in recommended doses. Animal studies have shown that holy basil may cause hypoglycemia and prolong bleeding time.
- Holy basil should not be used in pregnancy due to its traditional uses as a uterine stimulant.

References:

Adaptogen

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