

Baptisia tinctoria (L) R Br (wild indigo), Fabaceae and related species

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I Highlights

Baptisia is a potent antimicrobial herb, particularly topically and in the gastrointestinal tract.

Baptisia in overdose can cause severe purgation, gastroenteritis, and even death in extreme cases.

2 Basic Clinical Information

2.1 Part Used

Fresh root (and fresh leaf, though this is rarely the case anymore). Properly dried root retains most of the potency of fresh, and some believe it is even stronger this way.

2.2 Taste

Aromatic, slightly bitter, earthy

2.3 Principal Actions

- Antimicrobial
- Immune stimulant (Wustenberg, et al. 1999)

Also traditionally described as an alterative tonic, enhancing metabolism and repair and excretion of waste. Given the vagueness of this it is difficult to say what action or combination of actions was being described.

2.4 Major Organ System Affinities

Gastrointestinal tract

Upper respiratory tract

2.5 Major Indications

- Dysentery
- Other serious gastrointestinal infections
- Skin ulcers
- Gangrene
- Upper respiratory tract infections

Clinical trials conducted in Germany support the efficacy of Esberitox, a combination product containing extracts of *E. purpurea* root, *B. tinctoria* root, and *Thuja occidentalis* (western cedar) leaf, for patients with URI (Kohler, et al. 2002).

2.6 Major Constituents

Alkaloids

2.7 Energetics

(Dr. DiPasquale will complete this section in the future.)

2.8 Preparations and Dose

Tincture: 1:2-1:3, 50-60% ethanol, or else an acettract

Tincture Doses

Acute, adult: 1-2 ml every 2-3 h, adjusted for body size

Chronic, adult: 1-2 ml three times per day

Child: as adult but adjusted for body size

Elder: as adult

Tea Doses

Acute, adult: 2-3 g in 250 ml water decocted for 15 min, drink 1 cup every 2-3 h, adjusted for body size. Water used should be acidic to insure alkaloid salt formation and extraction. If uncertain, add a little vinegar, lemon juice, citric acid, vitamin C, or other simple acid.

Chronic, adult: as acute but 1 cup three times per day

Child: as adult but adjusted for body size

Elder: as adult

Tea and tincture can both be applied topically for skin afflictions.

2.9 Adverse Effects

Mildly loosened stools.

2.10 Contraindications

- Pregnancy
- Young children

2.11 Overdose

Excess doses may cause emesis and catharsis, even violently so (Russell 1997; Felter 1922). This is associated with inflammation of the gastrointestinal tract. There is also general myalgia and hypersalivation. With sufficient overdose in a susceptible person, neurological respiratory failure may ensue leading to death. This is extremely unlikely.

2.12 Incompatibilities

Do not mix with high-tannin or high-carbohydrate herb which may decrease absorption of the alkaloids (except in overdose situations).

2.13 Drug Interactions

Enhances efficacy of macrolide antibiotics in patients with acute exacerbations of chronic bronchitis (Hauke, et al. 2002).

Minimal benefit in combination with chemotherapy and/or radiation therapy in breast cancer patients, though also no harm (Bendel, et al. 1989; Bendel, et al. 1988).

3 Botanical Information

3.1 Common Names

English Common Names: wild indigo, yellow wild indigo, indigo weed, false indigo, bastard indigo, horsefly, horseflyweed, rattleweed

Baptisia is derived from Greek *bapto*, meaning to dye. Tinctoria is derived from the Latin word *tinctoriae* meaning to dye. The plant is useful for making purple dye.

3.2 Botanical Description

Perennial herb. Grows up to 1.5 m tall. Alternate leaflets, usually growing in groups of three, are 5-8 mm long. Inflorescence a terminal raceme. Corolla is bright yellow and blooms in early summer. The root is dark purple-black. Leaves turn black upon drying. Fruits are black inflated pods on short stalks. The seeds can be heard to rattle inside the seed pod, hence the common name rattleweed.

3.3 Interchangeability of Species

Baptisia alba (prairie indigo): found on Great Plains and in the East, appears to have similar properties to *B. tinctoria*. Corolla is white.

Michael Moore contends that several other species in the genus are interchangeable, including those found more in the region of Oklahoma and Texas, such as *B. australis*, *B. lactaea*, *B. leucantha*, *B. leucophaea*, and *B. sphaerocarpa*.

Indigofera tinctoria (true indigo, French indigo) leaf, also in the Fabaceae family, the original source of indigo dye and considered a superior dye plant all around.

Thermopsis spp: very similar effects according to Michael Moore.

3.4 Native Habitat and Current Range

Open fields or woodlands East of the Mississippi (not extending into Louisiana, Mississippi, or Alabama to any significant extent), north into southeastern Canada. It has not extended beyond this range.

3.5 Ecological Status

Some habitat loss but not generally considered imperiled. It is listed on the "To Watch" list of United Plant Savers.

3.6 Cultivation

Prefers full sun but will tolerate partial shade. Prefers low to medium moisture, as long as the soil is well-drained. Though slow to establish and difficult to grow from seed, over time the root system becomes very extensive. Plants should not be moved or disturbed once they are mature.

3.7 Wildcrafting

Still fairly extensive. It is not clear what the ecological status of this plant is, but only large stands should be harvested (and then only 10% of the stand at most) and some root material should be replanted after any harvesting. The problem here is that *B. tinctoria* doesn't tend to form large stands but instead individual clumps. Look for areas with a lot of scattered individuals.

4 Advanced Clinical Information

4.1 Additional Actions

Inflammation modulator, mild
Immunomodulator (Classen, et al. 2006)

4.2 Additional Indications

- Chronic bronchitis, acute exacerbations

In a double-blind trial, patients with chronic bronchitis who developed acute exacerbations were treated with macrolide antibiotics combined with either Esberitox or placebo for 28 days (Hauke, et al. 2002). FEV₁ was significantly better in the Esberitox group compared to the placebo group after 10 days. Time to half-maximal symptom improvement overall was twice as fast in the Esberitox group compared to placebo.

4.3 Constituents

Baptisin
Cytisine
Arabinogalactan-proteins (Classen, et al. 2006; Wack, et al. 2005)

4.4 Pharmacokinetics

No information was located.

4.5 Classic Formulations

Esberitox: This is a modern formulation but one that is well-researched. It contains a combination of extracts of *E. purpurea* and *E. pallida* root 50%, *B. tinctoria* root 40%, and *Thuja occidentalis* leaf 10%.

5 Other Viewpoints

5.1 Discussions in Historical Texts

The Eclectic Materia Medica (Felter 1922)

BAPTISIA

The recent root and leaves of *Baptisia tinctoria*, Robert Brown (Nat. Ord. Leguminosae), a perennial shrub-like plant, indigenous to North America.

Common Names: Wild Indigo, Indigo Weed.

Principal Constituents.—A poisonous alkaloid baptitoxine (baptisine); two glucosides, baptisin, non-poisonous, and baptin, laxative and cathartic; and a yellowish resin. Baptitoxine is identical with cystisine, ulexine, and sophorine, toxic principles found in other active plants, and resembles sparteine in its action upon the heart.

Preparations.—1. Decoctum Baptisiae, Decoction of Baptisia. (Recent root of Baptisia 1 ounce, Water 16 ounces.) Dose, 1 to 4 drachms; employed chiefly as a local application. 2. Specific Medicine Baptisia.—Dose, 1 to 20 drops; as a topical wash or dressing, 1-2 fluidounces to water 16 ounces. Usual form of administration: Rx Specific Medicine Baptisia, 20 drops Water, 4 fluidounces. Sig.: One teaspoonful every 1 to 2 hours.

Specific Indications.—Fullness of tissue, with dusky, leaden, purplish or livid discoloration, tendency to ulceration and decay (gangrene); sepsis, with enfeebled circulation; fetid discharges with atony; stools resembling prune juice or fetid meat washings; face swollen, bluish, and resembling one having been frozen or long exposed to cold; typhoid conditions.

Action.—Large doses of baptisia may provoke dangerous emetocatharsis, sometimes so violent as to induce gastro-enteritis. The evacuations are soft and mushy, and the effort is often accompanied by a general bodily discomfort or soreness. Profuse viscid ptyalism also occurs. Small doses are laxative; and the drug also appears to stimulate the intestinal glands to secrete more freely and probably increases hepatic secretion. Baptitoxine is said to quicken the breathing and accelerate and strengthen the heart-beat; but in toxic doses it paralyzes the respiratory center, thus causing death by asphyxiation.

Therapy.—External. Locally the decoction and the specific medicine baptisia (diluted with water) are effective as washes and dressings for indolent and fetid as well as for irritable and painful ulcers, inflammations with full or swollen and dusky tissues, and tendency to destruction, aphthous and nursing sore mouth, mercurial gingivitis, sore nipples, and ulceration of the cervix uteri, with foul, sanious, or muco-purulent leucorrhoea. Its internal exhibition hastens its local action in these conditions.

Internal. Internally, baptisia is indicated in pathological conditions characterized by feeble vitality, suppressed or vitiated secretions, and sepsis with a disposition to disintegration and death of tissues. These indications are manifest in the peculiar appearance of the parts affected, of the membranes, and of the patient as a whole. There is a peculiar duskiness of a bluish or purplish hue of the skin and mucous structures, and usually there is fetor. The face has a bluish, swollen appearance, with expressionless countenance, like one who has been long exposed to cold. There may be ulcers of an indolent character, with bluish or purplish edges. The excretions are fetid—those of the bowels being dark and tarry, or resembling the washings of raw meat or prune juice. Baptisia is not, as a rule, a remedy in acute diseases showing great activity, but rather for disorders showing marked capillary enfeeblement

and tendency to ulceration—in fact, a condition of atony. It is contraindicated by hyperaemia; indicated by capillary stasis.

Baptisia is important for its influence upon typhoid conditions. It is quite generally regarded as one of our most effective antityphoid agents. Here we encounter the dusky appearance of the skin and membranes, the sleek, beefy tongue with pasty coating, the fetor of mouth, sordes, upon teeth and lips, and the sluggish capillary flow. Its usefulness in typhoid or enteric fever is one of record. One or more of the foregoing symptoms will be present with the addition of the characteristic pea-soup, meat washings, or prune juice stools, or tarlike viscous evacuations, showing the admixture of decomposed blood. In fact, it is likely to be indicated by any form of persistent diarrhea accompanying this type of fever. Typhomalarial fever, which is most generally predominantly typhoid, is equally influenced for good by baptisia. Typhoid dysentery and typhoid pneumonia, so called, are helped by it just in proportion to the typhoid element present. In dysentery the greater the evidence of intestinal ulceration the stronger the call for baptisia.

For septic conditions other than typhoid, baptisia is distinctly useful. In putrid forms of sore throat, with great stench and full, dusky tissues, the angina of scarlet fever, and tonsillitis, with sluggish circulation and fetid exudate, and also when necrotic, baptisia holds a high rank as a remedy. It is often valuable as an aid in the treatment of diphtheria, but alone should not be relied upon to conquer this vicious disease. When most useful the tissues will be swollen, dusky, or blanched, the secretions free, and the parts sloughing. Indeed, the most important indication for the drug, is the tendency to disintegration of tissues. Baptisia is very valuable in putrid ulcerations of the nasal passages—in fetid catarrh, ozaena, and similar disorders with stench and turgidity. Under these circumstances it overcomes the putrescency, restrains the discharge, and promotes healing of the ulcerated surfaces.

In all of the local disorders mentioned, baptisia should be given internally as well as applied locally.

***Ginseng and Other Medicinal Plants* (Harding 1936)**

Wild Indigo. *Baptisia tinctoria* (L.) R. Br.

OTHER COMMON NAMES—Baptisia, indigo-weed, yellow indigo, American indigo, yellow broom, indigo-broom, cloverbroom, broom-clover, horsefly-weed, shoofly, rattlebush.

HABITAT AND RANGE—This native herb grows on dry, poor land, and is found from Maine to Minnesota, south to Florida and Louisiana.

DESCRIPTION OF PLANT—Many who have been brought up in the country will recognize in the wild indigo the plant so frequently used by farmers, especially in Virginia and Maryland, to keep flies away from horses, bunches of it being fastened to the harness for this purpose.

Wild Indigo grows about 2 to 3 feet in height and the cloverlike blossoms and leaves will show at once that it belongs to the same family as the common clover, namely, the pea family (Fabaceae.) It is an erect, much-branched, very leafy plant of compact growth, the 3-leaved, bluish green foliage somewhat resembling clover leaves. The flowers, as already stated, are like common clover flowers—that is, not like clover heads, but the single flowers composing these; they are bright yellow, about one-half inch in length and are produced in numerous clusters which appear from June to September. The seed pods, on stalks longer than the calyx, are nearly globular or ovoid and are tipped with an awl shaped style.

Another species, said to possess properties similar to those of *Baptisia tinctoria* and substituted for

it, is *B. alba* R. Br., called the white wild indigo. This plant has white flowers and is found in the Southern States and on the plains of the Western States.

DESCRIPTION OF ROOT—Wild Indigo has a thick, knotty crown or head, with several stem scars, and a round, fleshy root, sending out cylindrical branches and rootlets almost 2 feet in length. The white woody interior is covered with a thick, dark brown bark, rather scaly or dotted with small, wartlike excrescences. The root breaks with a tough, fibrous fracture. There is a scarcely perceptible odor and the taste, which resides chiefly in the bark, is nauseous, bitter and acrid.

COLLECTION, PRICES AND USES—The root of Wild Indigo is collected in autumn, and brings from 4 to 8 cents a pound.

Large doses of Wild Indigo are emetic and cathartic and may prove dangerous. It also has stimulant, astringent and antiseptic properties, and is used as a local application to sores, ulcers, etc.

The herb is sometimes employed like the root and the entire plant was official from 1830 to 1840.

In some sections the young, tender shoots are used for greens, like those of pokeweed, but great care must be exercised to gather them before they are too far advanced in growth, as otherwise bad results will follow.

A blue coloring matter has been prepared from the plant and used as a substitute for indigo, to which, however, it is very much inferior.

5.2 Ethnobotany

(Dr. Kingsbury will complete this section in the future.)

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7 Contributors

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