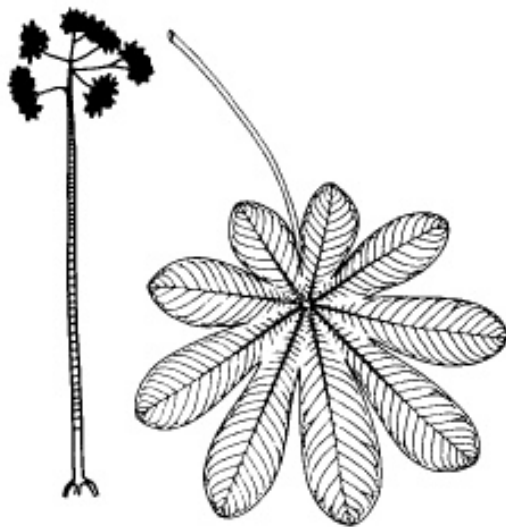


Technical Data Report

for

EMBAUBA

Cecropia obtusifolia



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Embauba

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Family: Cecropiaceae

Genus: Cecropia

Species: palmata, peltata, obtusifolia

Synonyms: *Cecropia amphichlora*, *C. arachnoidea*, *C. asperrima*, *C. concolor*, *C. dielsiana*, *C. hondurensis*, *C. mexicana*, *C. pachystachya*, *C. scabrifolia*, *C. surinamensis*, *Ambaiba palmata*

Common Name: Embauba, imbauba, umbauba, trumpet tree, bois canon, bois trompette, grayumbe, grayumbo, trompette, trompettier, yagruma, yagrumo, akowa, chancarpo, chancarro, guarumbo, guarumo, hormigo, hormiguillo, snakewood tree, pop-a-gun, tree-of-laziness, trompetenbaum, yaluma, certico, ambiabo, ambai, tree-of-sandpaper, palo lija

Part Used: Leaves

Embauba is native to Central and South America and the West Indies. It is a fast-growing, short-lived tree that springs up along riverbanks (where its seeds are deposited after annual flooding). It has large leaves (a foot wide), a hollow stem, and bears cylindrical fruit with soft, sweet flesh around many small seeds. The tree, growing 5–10 m tall, often is inhabited by stinging ants that are attracted to the honey-like sap produced by the leaves. The symbiotic relationship with the ants is thought to protect the tree from other leaf-eating insects. There are many closely-related *Cecropia* species (including *C. peltata*, *C. palmata*, and *C. obtusifolia*) that may have different geographical locations yet all are very similar in appearance, chemical makeup, and traditional medicinal uses. *Cecropia* trees (nearly 100 tropical species in South and Latin America) are propagated by the many small fruit seeds they produce (bats, monkeys, and birds eat the succulent fruit and disperse the seeds) and, often, can form dense stands of trees that choke the growth of other plants anywhere that the canopy is disturbed.

Indian tribes in the Amazon use embauba for its anti-inflammatory properties (typically for rheumatic and kidney inflammation). The leaf is made into a tea and used widely for asthma and other upper respiratory complaints, as well as for diabetes. It also has been used for sores on the mouth and tongue. The Palikur indigenous people of Guyana wrap the large leaves around bone fractures, bruises and wounds, and use embauba to disinfect the genitalia and alleviate pain after childbirth.

In herbal medicine systems, embauba is used widely throughout Central and South America. In Brazil it is used for all types of respiratory complaints (such as asthma, bronchitis, coughs, whooping cough, dyspnea and pneumonia). It is also used for diabetes, Parkinson's disease, kidney disorders, high blood pressure, and to increase the contraction strength of the heart muscle. It is considered effective against Parkinson disease in Colombia, where it also is used as a substitute for digitalis-containing plants (for heart problems), and to facilitate childbirth and menstruation. The leaf is used in Guatemalan herbal medicine systems for asthma, edema, rheumatism, diabetes, fever, atherosclerosis, and gonorrhea. The plant is popular in Mexico, where it is used for diabetes, coughs, inflammation, diarrhea, bladder irritation, asthma, obesity, liver disorders, high blood pressure, and warts. In Cuba, virtually every part of the plant is employed in herbal medicine. The latex is considered corrosive and astringent, and is used topically against warts, calluses, herpes (and other venereal diseases), and ulcers. The bark is considered antibleorrhagic (reduces mucus); the roots, antibilious; and the fruit, emollient. The leaves are considered analgesic, emmenagogue, and antiasthmatic, and are used in affections of the liver and hydropsy. Embauba is considered to have cardiovascular, febrifugal, diuretic, hepatic, analgesic, and wound-healing properties in Cuba. In other parts of Latin America, it is often touted as a "cure" for asthma after only a few weeks of taking a tea brewed from its leaves. (This has not been

confirmed with any clinical research, however).

Little research has been done to determine individual phytochemicals in embauba. In general, it is known to contain glycosides, lipids, alkaloids, flavonoids, tannins, cardenolids, triterpenes, polyphenols, steroids, and resins. A recent (2002) U.S. patent named ambain (a glycoside) and cecropin (an alkaloid) as the active phytochemicals that have cardiotoxic and diuretic properties.¹ The flavonoids and proanthocyanidins in embauba recently were reported to inhibit angiotensin-converting enzyme (ACE) *in vitro*.² (ACE inhibitors represent a class of pharmaceutical drugs used for hypertension which promote vasodilation and diuresis.) The traditional use of embauba for high blood pressure might be explained if these flavonoids and proanthocyanidins can be demonstrated to inhibit ACE *in vivo*.

Preliminary research is just beginning to explain and verify some of embauba's many uses in traditional medicine. *In vivo* research (with mice, rats, and guinea pigs) has shown that both hot water extracts and ethanol extracts of the leaves have analgesic, anti-inflammatory, and antispasmodic activities—which may explain, in part, its widespread traditional use in respiratory disorders.^{3,4} Cuban researchers, however, reported that leaf infusions did not evidence any bronchodilator activity (in guinea pigs).⁵ Other animal research has indicated that the plant has diuretic and hypotensive qualities. One study reported that it increased urine flow in rats by 20%—without affecting the excretion of sodium and potassium.⁶ Two different research groups (in Costa Rica and Mexico) reported that leaf extracts had hypotensive activity in rats (at 10 and 50 mg/kg).^{7,8} Another of embauba's traditional uses (in several countries) has been for diabetes. This use also has been studied in animals and verified by researchers. Water extracts of the leaf (given orally to mice and rats) were shown to lower plasma glucose levels in two studies;^{9,10} a hot water extract given to rabbits and dogs elicited the same blood-sugar-lowering effect.^{11,12} One of these research groups attributed the hypoglycemic effect of the leaf, in part, to two flavones in embauba (isoorientin and chlorogenic acid) which, when tested individually, also demonstrated hypoglycemic activity in rats.⁹

Embauba has been reported to have *in vitro* antibacterial activity against various bacteria (such as *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Salmonella* and *Shigella*).^{13,14} Both water and acetone extracts seemed to have much more biological activity against bacteria than methanol or ethanol extracts *in vitro*. An ethanol extract of the leaf and stem was reported to have *in vitro* antifungal activity, but water and acetone extracts were inactive¹⁵ (which suggests that antibacterial actions are derived from different chemicals than those providing antifungal actions). Embauba has also shown antioxidant activity with potent free-radical scavenging action.¹⁶ In 2002 a U.S. patent was filed on various extracts of *Cecropia peltata* for use in cosmetics and dermatology. The patent reported the extracts had “. . . pronounced action on lipolysis which make them useful in slimming preparations, but also owing to their tightening effect, their smoothing properties and the improvement of the radiance of the skin.”¹

It is hoped that researchers will continue to study embauba and validate more of its traditional uses—in particular, its use in respiratory disorders such as asthma and bronchitis. In the meantime, healthcare practitioners and herbalists around the world are utilizing this plant for not only respiratory disorders, but also for its cardiotoxic properties, antidiabetic activity, and for its (yet-to-be-studied) use in Parkinson's disease.

Documented Properties and Actions: Analgesic, antiasthmatic, antibacterial, antifungal, anti-inflammatory, antioxidant, antispasmodic, astringent, cardiotoxic, CNS depressant, cytotoxic, diuretic, emmenagogue, hypoglycemic, hypotensive, laxative, purgative

Main Phytochemicals: Ambain, arachidic acid, behenic acid, cecropin, cerotic acid, chlorogenic acid, isoorientin, leucocyanidin, lignoceric acid, polysaccharides, proanthocyanidins, stearic acid, ursolic acid

Traditional Remedy: One-half to one cup of a standard leaf infusion 2 times daily or 1–3 ml of a 4:1 leaf tincture twice daily; 2–3 grams of powdered leaf in tablets or capsules twice daily can be substituted, if desired.

Contraindications:

- Embauba has a traditional use of aiding childbirth and is considered an emmenagogue. It should not be taken during pregnancy.
- The plant has been reported in animal studies to have cardiotoxic properties, increasing the strength of cardiac muscle contraction. It should not be used by anyone with a cardiac disorder unless monitored by a medical doctor. Embauba also has demonstrated hypotensive activity in animal studies. Those with low blood pressure or those on medication to lower their blood pressure should seek the advice of a qualified healthcare professional prior to using this plant.
- Embauba has demonstrated a hypoglycemic effect in animals. It is contraindicated for persons with hypoglycemia. Diabetics should only use this plant under the supervision of a qualified health practitioner, as blood sugar levels should be monitored closely.

Drug Interactions: None reported in literature; however, embauba may potentiate cardiotonics (such as digitalis) as well as antihypertensive and ACE-inhibitor drugs. It may potentiate anti-diabetic and insulin drugs.

WORLDWIDE ETHNOBOTANICAL USES

Country	Uses
Amazonia	Anti-inflammatory, asthma, bruises, childbirth, diabetes, fractures, kidney, respiratory, rheumatic, sores, wounds
Brazil	Anuria, asthma, astringent, blennorrhagia, bronchitis, cancer, cardiotoxic, Chaga's disease, cough, decongestant, diabetes, diarrhea, diuretic, dyspnea, dysentery, edema, expectorant, gonorrhoea, grippe, heart, hematuria, hemoptysis, hemorrhage, hemorrhoid, hemostatic, hydropsy, hypertension, leucorrhoea, liver, malaria, oliguria, Parkinson's, pertussis, pneumonia, respiratory, rheumatism, sedative, snakebite, stimulant, ulcer, vagina, vulnerary, wart, wound
Colombia	Childbirth, heart problems, menstruation, Parkinson's disease
Costa Rica	Arterial hypertension, diuretic
Cuba	Abscess, aches, asthma, astringent, analgesic, antibilious, blennorrhagia, calluses, cardiac, coughs, digestive, diuretic, dysentery, emetic, emollient, fever, hepatic, herpes, hydropsy, liver, pains, pertussis, skin, ulcers, venereal disease, wart
Guatemala	Asthma, atherosclerosis, cardiac, diabetes, diuretic, dropsy, edema, febrifuge, gonorrhoea, hypertension, sudorific, rheumatism
	cont . . .

Country	Uses
Mexico	Asthma, bladder, bites (scorpion, ants), burns, calluses, cardiogenic, caustic, childbirth, chorea, corns, coughs, diabetes, diarrhea, diuretic, dropsy, dysentery, fever, fractures, hepatic, hepatitis, hydroxy, inflammation, liver, nerve, obesity, poison, pyralism, pulmonary, renal, ulcers, wart, wound
Nicaragua	Abscess, aches, coughs, diarrhea, digestive, fever, gastric, headache, intestine, liver, pain, pertussis, skin
Peru	Cardiogenic, diarrhea, diuretic, energetic, fever, heart, hemostatic, Parkinson's, wound
Trinidad	Bronchitis, cough, fever, flu, scorpion bite, snakebite
U.S.	Analgesic, anesthetic, antiasthmatic, astringent, cardiogenic, cytostatic, diuretic, emmenagogue, fungicide, hypnotic, laxative, purgative
Venezuela	Abrasive, astringent, cardiac, laxative, purgative, swelling, tonic, wound
Elsewhere	Abscess, aches, antiseptic, asthma, astringent, blennorrhagia, bronchitis, calluses, cancer, cardiogenic, childbirth, chorea, corn, cough, diabetes, diarrhea, digestive, diuretic, dropsy, dysentery, edema, emmenagogue, fever, flu, fractures, fumitory, gonorrhoea, hematoma, hepatitis, herpes, hypertension, liver, nerves, obesity, pain, pertussis, poison, scorpion bite, skin, snakebite, venereal disease, wart, wound

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The information contained herein is intended for education, research, and informational purposes only. This information is not intended to be used to diagnose, prescribe or replace proper medical care. The statements contained herein have not been evaluated by the Food and Drug Administration. The plant described herein is not intended to diagnose, treat, cure, mitigate, or prevent any disease.

Ethnomedical Information on Embauba (*Cecropia obtusifolia*)

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Inflorescence Amazonia	Used for sores of the tongue and mouth.	Chewed	Human Adult	ZZ1005
Leaf Amazon	Used for diabetes and for its anti-inflammatory properties; for rheumatic and kidney inflammation.	H2O Ext Oral & Topical	Human Adult	BL1023
Shoot Brazil	Used for blennorrhagia.	Infusion Oral	Human Adult	ZZ1096
Shoot Brazil	Used as an astringent and hemostatic, for affections of the respiratory system, asthma, bronchitis, whooping cough, coughs, dyspnea, dysentery, diarrhea, hemoptysis, hematuria, hemorrhoids and to increase the energy of the contraction of the cardiac muscle. A diuretic.	Infusion Oral	Human Adult	ZZ1007
Shoot Brazil	Used for vaginal irritation and leucorrhea.	Tincture External	Human Adult	ZZ1007
Bud Brazil	Used for asthma, cough, bronchitis, pneumonia, heart failure, edema, liver diseases, malaria, Parkinson's disease and as a cardiotonic.	Decoction Oral	Human Adult	BL1001
Leaf + Shoots Brazil	Used to activate the function of the cardiac, circulatory and respiratory systems; a diuretic. Used for diabetes, asthma, bronchitis and coughs.	ETOH Ext Oral	Human Adult	ZZ1081
Leaf Brazil	Used as a diuretic and to activate the function of the cardiac and circulatory system. Used for diabetes, asthma, bronchitis and coughs.	Infusion Oral	Human Adult	ZZ1081
Leaf Brazil	Used to correct vaginal problems. Used for cutaneous affections and wounds.	Decoction Douche Decoction External	Human Female Human Adult	ZZ1081
Leaf Brazil	Used as a decongestant and to combat acute respiratory affections. Used for hyperglycemia and diabetes. Said to improve sensitivity to insulin and elevates the concentration of inositol in cells.	Infusion Oral	Human Adult	ZZ1076
Leaf Brazil	Used for bronchitis, leucorrhea, blennorrhagia, whooping cough and affections of the heart.	Not Stated	Human Adult	ZZ1079
Leaf Brazil	Used as a diuretic.	Infusion Oral	Human Adult	ZZ1096
Leaf Brazil	Used as a stimulant and diuretic.	Not Stated	Human Adult	ZZ1099

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Leaf Brazil	Used for asthma, cough, edema, liver diseases, malaria, Parkinson's disease, diarrhea, wounds, gonorrhea, leucorrhea, rheumatism and hemorrhage. Said to be a diuretic, sedative and cardiotoxic.	Decoction Oral	Human Adult	BL1001
Leaf Brazil	Used for coughs, asthma, gripe and whooping cough. Used to tonify the heart and regulate its contraction, used as a diuretic.	Decoction Oral	Human Adult	BL1007
Latex Brazil	Used for chronic wounds, gangrenous ulcers and warts.	Latex External	Human Adult	ZZ1072
Sap Brazil	Used for ulcers, warts, snakebite and Chaga's disease. Used for diarrhea.	Sap External Sap Oral	Human Adult	BL1001
Entire Plant Brazil	Used to normalize arterial pressure. Considered an expectorant, astringent, antidiabetic, diuretic, cardiotoxic, hypotensive and vulnerary. Used for Parkinson's disease.	Not Stated	Human Adult	ZZ1076
Root + Leaf Brazil	Used for coughs, bronchitis, whooping cough, weakness of the heart, malaria and to lower arterial pressure.	Root Juice Oral or Leaf Infusion Oral	Human Adult	ZZ1092
Root + Leaf Brazil	Used for asthma, bronchitis, coughs, whooping cough, cardiomyopathy, oliguria, anuria, Parkinson's disease, diabetes and hydropsy. Considered an astringent, diuretic, cardiotoxic, expectorant and antidiabetic.	Decoction Oral	Human Adult	ZZ1072
Root Brazil	Used for asthma, bronchitis, coughs and whooping cough.	Decoction Oral	Human Adult	ZZ1096
Root Brazil	Used as a diuretic and to increase the energy of the cardiac muscle without increasing the heart beat.	Not Stated Oral	Human Adult	ZZ1005
Root Brazil	Used for asthma, cough, edema, liver diseases, malaria, Parkinson's disease, pneumonia, bronchitis and heart failure. Used as a cardiotoxic.	Decoction Oral	Human Adult	BL1001
Root Brazil	Used to treat cancerous ulcers.	Juice Not Stated	Human Adult	BL1007
Trunk pith Brazil	Used as a vulnerary and hemostatic. Used for leucorrhea, blennorrhagia, diarrhea and diabetes.	Not Stated	Human Adult	ZZ1099
Node (trunk & branch) Brazil	Used for asthma. Used for wounds.	Infusion Oral Infusion External	Human Adult	BL1001
Not Stated Brazil	Used for bronchitis, coughs and other respiratory pathology. Used to increase the contractile force of the heart; a diuretic.	Not Stated	Human Adult	BL1006

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Not Stated Brazil	Used for bronchitis, coughs, whooping cough and other respiratory affections. It has an effect on the heart, increasing heart muscle contractions. Also, when the urine becomes scarce due to poorly functioning kidneys, it promotes diuresis.	Not Stated	Human Adult	ZZ1013
Not Stated Colombia	Used for Parkinson's disease and to facilitate childbirth and menstruation.	Not Stated	Human Adult	BL1006
Not Stated Costa Rica	Used to treat arterial hypertension and used as a diuretic.	Not Stated	Human Adult	BL1014
Latex Cuba	Considered corrosive and astringent. Used for warts, calluses, herpes, ulcers, venereal disease and dysentery.	Not Stated	Human Adult	BL1006
Leaf Cuba	Antiblennorrhagic and antibilious.	Not Stated	Human Adult	BL1006
Leaf Cuba	Used for aches, abscesses, coughs, pains, fever, pertussis, skin lesions and digestive problems.	Not Stated	Human Adult	BL1011 BL1012
Root + Fruit Cuba	Emollient.	Not Stated	Human Adult	BL1006
Salt Cuba	Considered analgesic, emetic, antiasthmatic and is used for liver affections and hydropsy.	Not Stated	Human Adult	BL1006
Not Stated Cuba	Considered to be a cardiovascular, diuretic, hepatic, analgesic and febrifuge for fevers.	Not Stated	Human Adult	BL1006
Not Stated El Salvador	Used to facilitate menstruation and expel the afterbirth.	Not Stated	Animals	BL1016
Buds Guatemala	Used for asthma.	Infusion Oral	Human Adult	K26154
Leaf Guatemala	Used for gonorrhea.	ETOH Ext Oral	Human Adult	BL1018
Leaf Guatemala	Used for rheumatism.	Decoction Bath	Human Adult	BL1010
Leaf Guatemala	Used as a diuretic for edema and dropsy. Used as a febrifuge and sudorific.	Hot H2O Ext Oral	Human Adult	T15295
Not Stated Guatemala	Used as an antidiabetic, cardiac, diuretic, febrifuge and antiatherogenic.	Not Stated	Human Adult	BL1019
Not Stated Guyana	Used for fractures, absorption of hematomas, the healing of wounds, for disinfecting the genitalia and for pain alleviation after childbirth.	Not Stated External	Human Adult	BL1025

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Leaf Haiti	Used for edema.	H2O Ext Oral	Human Adult	T13846
Not Stated Haiti	Used as an astringent. Used for asthma, cough, bronchitis, diarrhea, dysentery, gonorrhea, herpes and wounds.	Not Stated	Human Adult	BL1017
Not Stated Honduras	Used to aid animals during birthing. Given during labor to speed up the birthing process and after labor so the placenta is expelled quickly.	Not Stated	Animals	BL1017
Leaf Jamaica	Used for aches, abscesses, coughs, pains, fever, pertussis, skin lesions and digestive problems.	Not Stated	Human Adult	BL1011 BL1012
Not Stated Latin America	Used for asthma.	Not Stated	Human Adult	BL1006
Flower + Leaf Mexico	Used to treat diabetes.	Infusion Oral	Human Adult	K16948
Flower + Leaf Mexico	Used for diabetes.	Decoction Oral	Human Adult	K10686
Flower + Leaf Mexico	Used for treatment of diabetes. Infusion is taken for 5 to 8 days.	Infusion Oral	Human Adult	M05236
Flower + Leaf Mexico	Used as an anti-tussive and anti-inflammatory. Used to treat diarrhea.	Hot H2O Ext Oral	Human Adult	M08249
Leaf Mexico	Used to treat irritation of the bladder.	Infusion Oral	Human Adult	K16948
Leaf Mexico	Used for diabetes, pulmonary diseases such as asthma and hepatic affections. Also used for obesity and hydropsy.	Infusion Oral	Human Adult	BL1008
Leaf Mexico	Used as an antitussive, antidiabetic, antipyretic and diuretic. Used for cardiac affections, as a cardiotonic, for hepatic and pulmonary disorders, for asthma, wounds and fractures of the bone. Said to reduce arterial pressure and treat renal problems.	Infusion Oral	Human Adult	BL1014
Leaf Mexico	Used for bites of scorpions and ants. Used for excess salivation.	Infusion Bath Infusion Not Stated	Human Adult	BL1014
Leaf Mexico	Used for burns and wounds.	Decoction Bath or Cataplasm	Human Adult	BL1014
Leaf + Stem Mexico	Used for treatment of diabetes.	Decoction Oral	Human Adult	M23792
Leaf + Stem Mexico	Used as an antidiabetic and diuretic; used for hepatic congestion and obesity. Used for warts.	Not Stated Oral Not Stated External	Human Adult	T08848

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Leaf Mexico	Used for diabetes.	Infusion Oral	Human Adult	T08016
Latex Mexico	Used for warts.	Latex External	Human Adult	BL1014
Not Stated Mexico	Used for asthma, dysentery, liver, ulcers, warts, wounds, chorea, diabetes, dropsy, hepatitis, nerve, obesity, calluses and corns. Considered a cardiogenic and diuretic.	Not Stated	Human Adult	BL1017
Not Stated Mexico	Used as a cardiogenic.	Hot H2O Ext Oral	Human Adult	T03380
Not Stated Mexico	Used to lower milk in breasts and to diminish pains after childbirth.	Hot H2O Ext External	Human Female	T08771
Leaf Nicaragua	Used for aches, abscesses, coughs, pains, fever, pertussis, skin lesions and digestive problems.	Not Stated	Human Adult	BL1011 BL1012
Leaf Nicaragua	Used for bad belly, diarrhea and fever. Used for liver.	Leaves Oral Leaves Not Stated	Human Adult	K26492
Not Stated Nicaragua	Used for gastric or intestinal illnesses and headaches.	Not Stated Oral	Human Adult	BL1025
Stem Panama	Used as an antihypertensive.	Infusion Oral	Human Adult	L18181
Leaf Peru	Used for fevers, as a cardiogenic and diuretic. Used for wounds.	Infusion Oral Not Stated	Human Adult	ZZ1093
Leaf Peru	Used for Parkinson's disease.	Decoction Oral	Human Adult	ZZ1093
Stem Peru	Crushed, mixed with mud and applied to wounds.	Maceration External	Human Adult	ZZ1093
Root Peru	Used as an energetic, diuretic and as a stimulant to the heart.	Juice Oral	Human Adult	ZZ1084
Root + Stem Peru	Used for diarrhea and to stimulate the heart. Used as a hemostatic for wounds. Used as a diuretic.	Not Stated Oral Infusion Oral	Human Adult	ZZ1101
Not Stated Puerto Rico	Used to increase cardiac muscular contraction and acts upon the kidneys as a diuretic.	Not Stated	Human Adult	BL1003
Leaf Suriname	Used against albumin in the urine; used for the urinary passages, bladder and kidney disorders, as well as a cure for asthma.	Infusion Oral	Human Adult	BL1002

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Root Trinidad	Used for snakebites.	Chewed	Human Adult	BL1009 BL1013 BL1012
Not Stated Trinidad	Used for cough, bronchitis, fever, flu, snake and scorpion bites.	Not Stated	Human Adult	BL1017
Not Stated Uruguay	Used as a cardiotoxic and diuretic.	Not Stated	Human Adult	BL1017
Not Stated USA	Used as an analgesic, hypnotic, anesthetic, antiasthmatic, diuretic, fungicide, laxative, astringent, cardiotoxic, cytostatic, emmenagogue and purgative.	Not Stated	Human Adult	BL1005
Root Venezuela	Used to heal wounds.	Not Stated External	Human Adult	BL1004
Leaf Venezuela	Used to reduce swelling and used as an abrasive.	Poultice External	Human Adult	BL1004
Not Stated Venezuela	Used as an astringent, cardiac and tonic.	Not Stated	Human Adult	BL1017
Shoots West Indies	Used for excessive menstrual flow.	Juice Oral	Human Female	T00701
Latex Not Stated	Used for warts, calluses and venereal diseases.	Latex External	Human Adult	BL1002
Not Stated	Used for cancer, asthma, snakebite, blennorrhagia, bronchitis, callus, chorea, corn, cough, diabetes, diarrhea, diuretic, dropsy, dysentery, emmenagogue, fever, flu, fumitory, gonorrhoea, hepatitis, herpes, liver, nerves, obesity, poison, scorpion bites, warts and wounds. Said to be cardiotoxic and astringent.	Not Stated	Human Adult	ZZ1022

Presence of Compounds in Embauba (*Cecropia obtusifolia*)

Compound	Chemical type	Plant Part	Plant Origin	Quantity	Ref #
Ambain	Glycoside	Not Stated	Brazil	Not Stated	ZZ1007
		Stem	Brazil	Not Stated	BL1008
		Root	Brazil	Not Stated	BL1008
		Not Stated	Guatemala	Not Stated	BL1019
		Not Stated	France	Not Stated	BL1025
Arachidic acid	Lipid	Not Stated	Guyana	Not Stated	BL1015
Behenic acid	Lipid	Not Stated	Guyana	Not Stated	BL1015
Cecropin	Alkaloid	Root	Peru	Not Stated	ZZ1084
		Not Stated	Brazil	Not Stated	ZZ1007
		Stem	Brazil	Not Stated	BL1008
		Root	Brazil	Not Stated	BL1008
		Not Stated	Guatemala	Not Stated	BL1019
Not Stated	France	Not Stated	BL1025		
Cerotic acid	Lipid	Not Stated	Guyana	Not Stated	BL1015
Chlorogenic acid	Flavone	Leaf	Mexico	Not Stated	BL1022
Leucocyanidin	Alkaloid	Leaf	Guyana	Not Stated	BL1015
Lignoceric acid	Lipid	Not Stated	Guyana	Not Stated	BL1015
Orientin, iso	Flavone	Leaf	Mexico	Not Stated	BL1022
Polysaccharide, un-named	Flavonoid	Not Stated	Not Stated	Not Stated	BL1025
Proanthocyanidins	Flavonoids	Not Stated	France	Not Stated	BL1023
Stearic acid	Lipid	Not Stated	Guyana	Not Stated	BL1015
Ursolic acid	Lipid	Cortex	Not Stated	Not Stated	BL1025

OTHER PHYTOCHEMICAL SCREENING:

Flavonoids	Present	ZZ1076 BL1023 BL1025
Tannins	Present	ZZ1076 BL1025
Alkaloids	Present	ZZ1076
Resins	Present	ZZ1007
Cardenolids	Present	BL1025
Triterpenes	Present	BL1025
Polyphenols	Present	BL1025
Steroids	Present	BL1025

Biological Activities for Extracts of Embauba (*Cecropia obtusifolia*)

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Leaf Costa Rica	Toxicity Assessment (quantitative)	H2O Ext	IP Mouse Male	LD50=1450 mg/kg			L15533
Leaf + Stem Jamaica	Toxicity Assessment (quantitative)	ETOH(95%)Ext H2O Ext	IP Mouse IP Mouse	1.0 ml 0.1 ml			A03360
Leaf Costa Rica	Diuretic Activity	H2O Ext	Oral Rat	500 mg/kg	Active	Increased urine flow by 20%.	BL1024
Leaf Guatemala	Diuretic Activity	Decoction	Oral Rat	1.0 gm/kg	Inactive		T15295
Leaf Costa Rica	Renal Parameter Alterations	H2O Ext	Oral Rat	500 mg/kg	Inactive	While urine flow was increased, there was no effect in excretion in urine of osmoles, sodium and potassium, or daily ingestion of food and water.	BL1024
Leaf Cuba	Bronchodilator Activity	Hot H2O Ext	IV Guinea Pig	1.5 ml	Inactive		M29843
Leaf Costa Rica	Anti-inflammatory Activity	H2O Ext H2O Ext	External Mouse IP Rat Male	1.0 mg/kg 125.0 mg/kg	Active Active	vs. TPA- induced ear inflammation. vs. carrageenan-induced pedal edema.	L15533
Leaf Mexico	Anti-inflammatory Activity	ETOH(95%)Ext	Not Stated	Not Stated	Equivocal	In het-cam assay.	L07398
Leaf Costa Rica	Analgesic Activity	H2O Ext H2O Ext H2O Ext	IP Mouse Male IP Mouse Male IP Mouse Male	50.0 mg/kg 50.0 mg/kg 500.0 mg/kg	Active Active Inactive	vs. acetic acid-induced writhing. vs. formalin-induced pain. vs. hot plate method.	L15533
Leaf + Stem Jamaica	Spasmogenic Activity	ETOH(95%)Ext H2O Ext	Guinea Pig IP Guinea Pig	0.33 ml/liter 0.33 ml/liter	Active Active	Ileum. Ileum.	A03360
Leaf Costa Rica	Antihypertensive Activity	H2O Ext	In Drinking Water Rat	20.0 mg/kg	Inactive	Spontaneously hypertensive rats were dosed for 4 weeks.	M20733
Leaf Costa Rica	Antihypertensive Activity	H2O Ext	IV Rat	50.0 mg/kg	Active	The effect was tested in spontaneously hypertensive rats.	M20734
Leaf Costa Rica	Hypotensive Activity	H2O Ext	IV Rat	50.0 mg/kg	Weak Activity		M20734
Leaf Mexico	Hypotensive Activity	Lyophilized Extract	IV Rat	10.0 mg/kg	Active		M08249

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Leaf Mexico	Tachycardia Activity	Lyophilized Extract	IV Rat	10.0 mg/kg	Active		M08249
Leaf Mexico	Hyperlipidemic Activity	Hot H2O Ext	IV Dog	150.0 mcl/kg	Active	Results significant at p < 0.05 level. vs. pancreatectomy and vs. pancreatectomy with duodenectomy.	M05236
Root + Cortices + Leaf France	Lipolytic Activity	H2O Ext ETOH Ext	In vitro	0.04% wt./vol. 0.05% wt./vol. 0.04% wt./vol.	Active Active Active	41% activation of lipolysis. 44% activation of lipolysis. 58% activation of lipolysis.	BL1025
Leaf + Stem Mexico	Antihyperglycemic Activity	H2O Ext H2O Ext	Oral Mouse IP Mouse	Not Stated Not Stated	Active Active	vs. alloxan-induced hyperglycemia. vs. alloxan-induced hyperglycemia.	T08848
Leaf Mexico	Hypoglycemic Activity	Decoction	IG Rabbit	4.0 ml/kg	Weak Activity	Glucose levels were decreased 18.9%.	K10686
Leaf Mexico	Hypoglycemic Activity	Hot H2O Ext	IV Dog	150.0 mcl/kg	Active	vs. pancreatectomy and vs. pancreatectomy with duodenectomy.	M05236
Leaf Mexico	Hypoglycemic Activity	H2O Ext H2O Ext BuOH Ext BuOH Ext	Oral Rat	90 mg/kg 150 mg/kg 9 mg/kg 15 mg/kg	Active	All extracts lowered plasma glucose levels after 3 hr of administration. vs. streptozotocin-induced diabetes.	BL1022
Leaf Costa Rica	CNS Depressant Activity	H2O Ext	IP Mouse	125.0 mg/kg	Active		L15533
Not Stated Mexico	Antibacterial Activity	H2O Ext MEOH Ext MEOH Ext MEOH Ext	Agar Plate Agar Plate Agar Plate Agar Plate	MIC=4.0 mg/ml 2.5 mg/ml 2.5 mg/ml 2.5 mg/ml	Active Inactive Inactive Inactive	<i>Staphylococcus aureus</i> <i>Escherichia coli</i> <i>Proteus vulgaris</i> <i>Sarcina lutea</i>	J12224
Bark Guatemala	Antibacterial Activity	ETOH- H2O(50%)Ext	Agar Plate	50.0 mcl	Inactive Inactive Inactive Inactive	<i>Salmonella enteritidis</i> <i>Salmonella typhosa</i> <i>Shigella dysenteriae</i> <i>Shigella flexneri</i>	K24899

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Leaf Cuba	Antibacterial Activity	Acetone Ext	Agar Plate	Not Stated	Active Active Active Active Active Active Inactive Inactive Inactive Inactive	<i>Escherichia coli</i> <i>Pseudomonas aeruginosa</i> <i>Salmonella B</i> <i>Serratia marcescens</i> <i>Shigella flexneri</i> <i>Staphylococcus albus</i> <i>Salmonella newport</i> <i>Salmonella typhi</i> <i>Sarcina lutea</i> <i>Staphylococcus aureus</i>	T16261
Leaf Cuba	Antibacterial Activity	ETOH(95%)Ext	Agar Plate	Not Stated	Inactive Inactive Inactive Inactive Inactive Inactive Inactive Inactive Inactive Inactive	<i>Escherichia coli</i> <i>Pseudomonas aeruginosa</i> <i>Salmonella B</i> <i>Salmonella newport</i> <i>Salmonella typhi</i> <i>Sarcina lutea</i> <i>Serratia marcescens</i> <i>Shigella flexneri</i> <i>Staphylococcus albus</i> <i>Staphylococcus aureus</i>	T16261
Leaf Cuba	Antibacterial Activity	H2O Ext	Agar Plate	Not Stated	Active Active Inactive Inactive Inactive Inactive Inactive Inactive Inactive Inactive	<i>Shigella flexneri</i> <i>Staphylococcus albus</i> <i>Escherichia coli</i> <i>Pseudomonas aeruginosa</i> <i>Salmonella B</i> <i>Salmonella typhi</i> <i>Sarcina lutea</i> <i>Serratia marcescens</i> <i>Staphylococcus aureus</i> <i>Salmonella newport</i>	T16261
			Rat	Not Stated	Inactive		
Stem Cuba	Antibacterial Activity	Acetone Ext	Agar Plate	Not Stated	Active Active Active Active Active Active Active Active Inactive Inactive	<i>Escherichia coli</i> <i>Pseudomonas aeruginosa</i> <i>Salmonella B</i> <i>Salmonella newport</i> <i>Salmonella typhi</i> <i>Serratia marcescens</i> <i>Shigella flexneri</i> <i>Staphylococcus aureus</i> <i>Sarcina lutea</i> <i>Staphylococcus albus</i>	T16261

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Stem Cuba	Antibacterial Activity	ETOH(95%)Ext	Agar Plate	Not Stated	Active Inactive Inactive Inactive Inactive Inactive Inactive Inactive Inactive Inactive	<i>Serratia marcescens</i> <i>Escherichia coli</i> <i>Poliovirus(unspec)</i> <i>Pseudomonas aeruginosa</i> <i>Salmonella B</i> <i>Salmonella newport</i> <i>Salmonella typhi</i> <i>Shigella flexneri</i> <i>Staphylococcus albus</i> <i>Staphylococcus aureus</i>	T16261
Stem Cuba	Antibacterial Activity	H2O Ext	Agar Plate	Not Stated	Active Active Active Active Active Active Active Active Inactive Inactive Inactive	<i>Escherichia coli</i> <i>Pseudomonas aeruginosa</i> <i>Salmonella newport</i> <i>Salmonella typhi</i> <i>Sarcina lutea</i> <i>Serratia marcescens</i> <i>Shigella flexneri</i> <i>Salmonella B</i> <i>Staphylococcus albus</i> <i>Staphylococcus aureus</i>	T16261
Not Stated Cuba	Antifungal Activity	Not Stated	Agar Plate	Not Stated	Active	<i>Ascomiceto Neurospora crassa</i>	BL1020
Leaf Cuba	Antifungal Activity	Acetone Ext ETOH(95%)Ext H2O Ext	Agar Plate Agar Plate Agar Plate	50% 50% 50%	Inactive Active Inactive	<i>Neurospora crassa</i> <i>Neurospora crassa</i> <i>Neurospora crassa</i>	T08589
Stem Cuba	Antifungal Activity	Acetone Ext ETOH(95%)Ext H2O Ext	Agar Plate Agar Plate Agar Plate	50% 50% 50%	Inactive Active Inactive	<i>Neurospora crassa</i> <i>Neurospora crassa</i> <i>Neurospora crassa</i>	T08589
Not Stated Mexico	Antiyeast Activity	MEOH Ext	Agar Plate	2.5 mg/ml	Inactive	<i>Candida albicans</i>	J12224
Not Stated Paraguay	Free-Radical Scavenging Activity	MEOH Ext	Rat microsomal membranes	Not Stated	Active	Scavenged superoxide and DPPH radicals.	BL1021
Leaf Panama	Cytotoxic Activity	H2O Ext MeCl2 Ext MEOH Ext	Cell Culture	Not Stated	Inactive Inactive Inactive	Ca-human-colon-co-115.	M18404
Leaf Mexico	Transcription Inhibition	ETOH(95%)Ext	Cell Culture	100.0 mcg/ml	Inactive	Ca-hela. Inhibited NF-kappa B activation.	L07398

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Root + Cortices + Leaf France	Skin Toning Effect	H2O Ext	Human Adult	1.5%	Active	Increased dynamic tension (tightening of the skin increases dynamic tension) 25.4-52%.	BL1025
Root + Cortices + Leaf France	Skin Hydration	ETOH Ext	Human Adult	1.5%	Active	Increased coefficient friction by 31.5%; this shows an improvement in cutaneous softness and skin moisture.	BL1025
Root + Cortices + Leaf France	Effect on Skin Complexion & Radiance	ETOH Ext H2O Ext	Human Adult	1.5%	Active Active	Increased mean reflectivity value by 11% Increased mean reflectivity value by 14%. An increase in mean reflectivity value demonstrates improved radiance of the complexion.	BL1025
Stem Panama	AT-1 Receptor Inhibition	CHCl3 Sol Fract H2O Ext H2O Ext Hexane Ext MEOH-CH2Cl2 MEOH-H2O Ext Tannin-free Extract	Not Stated Not Stated Not Stated Not Stated Not Stated Not Stated Not Stated	10.0 mcg/ml 10.0 mcg/ml 10.0 mcg/ml 10.0 mcg/ml 10.0 mcg/ml 10.0 mcg/ml 10.0 mcg/ml	Inactive Inactive Active Inactive Inactive Inactive Inactive		L18181
Stem Panama	ET-A Receptor Inhibition	ETOH(80%)Ext	Not Stated	100.0 mcg/ml	Active		L18181
Stem Panama	Y-1 Receptor Inhibition	CHCl3 Sol Fract H2O Ext Hexane Ext MEOH-CH2Cl2 MEOH-H2O Ext	Not Stated Not Stated Not Stated Not Stated Not Stated	10.0 mcg/ml 10.0 mcg/ml 10.0 mcg/ml 10.0 mcg/ml 10.0 mcg/ml	Active Inactive Inactive Inactive Inactive		L18181

Biological Activities for Compounds of Embauba (*Cecropia obtusifolia*)

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Ambain	Diuretic Activity	Not Stated	Not Stated	Active		BL1008 BL1025
Cecropin	Diuretic Activity	Not Stated	Not Stated	Active		BL1008 BL1025
Flavonoids + Proanthocyanidins	Angiotensin Converting Enzyme Inhibition	In vitro	0.33 mg/ml	Active		BL1023
Ambain	Cardiovascular Activity	Not Stated	Not Stated	Active	Cardiac tonic.	BL1008 BL1025
Cecropin	Cardiovascular Activity	Not Stated	Not Stated	Active	Cardiac tonic.	BL1008 BL1025
Isoorientin	Hypoglycemic Activity	Oral Rat	Not Stated	Active	vs. streptozotocin-induced diabetes.	BL1022
Chlorogenic acid	Hypoglycemic Activity	Oral Rat	Not Stated	Active	vs. streptozotocin-induced diabetes.	BL1022
Polysaccharide	Glycogen Effect	Not Stated	Not Stated	Active	Un-named polysaccharide has a structure close to glycogen.	BL1025

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