

Technical Data Report

for

IPORURU

Alchornea castaneifolia



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Iporuru

Family: Euphorbiaceae

Genus: *Alchornea*

Species: *castaneifolia*

Synonyms: *Hermesia castaneifolia*

Common Names: Iporuru, iporoni, iporuro, ipururo, ipurosa, macochihua, niando, pajaro

Parts Used: Leaves, bark, roots

Iporuru is a shrubby tree with light-brown bark and violet flowers that reaches 8–10 m tall. It grows extensively in the lower elevations and flood plains of the Amazon River system in Peru, and is indigenous to the moist, tropical areas in Argentina, Bolivia, Brazil, Colombia, Paraguay, and Venezuela. Iporuru can be harvested only in the Amazon's dry season; it spends the rainy season underwater. The locals believe that the active medicinal properties found in the bark are present only during the dry season. Iporuru belongs to the large Euphorbiaceae family, which contains about 5,000 species of trees, shrubs, and herbs.

For centuries the indigenous peoples of the Amazon have used the bark and leaves of iporuru for many different purposes and prepared it in many different ways. The plant commonly is used with other plants during shamanistic training and, sometimes, is an ingredient in ayahuasca (a hallucinogenic, multi-herb decoction used by South American shamans). Throughout the Amazon the bark or leaves are tinctured (generally with the local rum, called *aguardiente*) as a local remedy for rheumatism, arthritis, colds, and muscle pains. It is well known to the indigenous peoples of Peru for relieving the symptoms of osteoarthritis, and in aiding flexibility of movement and range of motion. The Candochi-Shapra and the Shipibo Indian tribes use both the bark and roots for treating rheumatism. To prevent diarrhea, members of the Tikuna tribe take 1 tbsp. of bark decoction before meals. The pain-relieving properties of iporuru appear in topical treatments; crushed leaves are rubbed on painful joints and are beaten into a paste to apply to painful stingray wounds.

Today, iporuru remedies and products are sold in local markets and herbal pharmacies in Peru, where it is recommended highly for arthritis and rheumatism. In addition, locals prepare the leaves into a decoction for coughs. The leaves of iporuru are used in some parts of Peru to increase female fertility (mostly in cases where the male is relatively impotent). Richard Rutter, noted Peruvian ethnobotanist, insists that iporuru is widely used as an effective aphrodisiac and geriatric tonic for males. Throughout Peru it is regarded as a remedy for impotency as well as for reducing sugar in diabetics. The remedy calls for one cup of dried leaves to be infused in 1/2 l of water for one day, and 2–3 doses (of 1/2 cup) are drunk daily for impotency. For diabetes, 1/2 cup of dried leaves are infused in 1 l of water, and one cup is drunk after each meal. Iporuru has been gaining popularity among North American athletes and health practitioners recently; reports have it that iporuru provides nutritional support to muscle and joint structures. Here in the U.S., its reported analgesic and anti-inflammatory properties have begun to make it popular also to those suffering from arthritis and other joint problems.

Little research has been done to catalog completely the phytochemicals in iporuru. Initial screening has revealed it to contain steroids, saponins, phenols, flavonols, flavones, tannins, xanthonenes, and alkaloids. The anti-inflammatory properties of iporuru are attributed to a group of alkaloids, including one called *alchorneine*, which are found in the bark of iporuru as well as several other species of *Alchornea*.¹

Likewise, there has been little clinical research on iporuru—despite its long history of use in South American herbal medicine. That which has been done, however, does help explain some of its traditional uses. Pharmacognosy students in Sweden documented that an ethanol extract of the stem bark was capable of reducing lab-induced swelling and inflammation (ear edema) in rats when applied topically.² These researchers also reported that the extract (at 100 mcg/ml) also was able to inhibit COX-1 prostaglandin synthesis.² Prostaglandins, produced by the activity of the enzyme cyclooxygenase (COX), are linked to inflammatory processes and diseases. (COX-inhibitors are a newer class of anti-inflammatory and arthritis pharmaceutical drugs on the market.) This prostaglandin inhibition activity may, in part, explain the traditional use of iporuru for inflammatory joint and muscle disorders such as osteoarthritis, arthritis, and rheumatism. Other researchers in the U.S. confirmed these effects by injecting mice with an ethanol extract of iporuru and observing an anti-inflammatory effect against carrageenan-induced pedal edema.³

Other preliminary *in vitro* research (performed in Canada) has reported iporuru's antifungal, antiviral, and antitumor activities.⁴ In their "crown gall tumor inhibition" assay (a preliminary laboratory test to predict antitumor activity), ethanol extracts and water extracts of the dried bark tested active at effective concentrations of only 0.14 and 0.52 mcg/ml, respectively. In another test to predict antitumor activity (an anticrustacean assay with *Artemia salina*), the ethanol extract tested active (at 41 mcg/ml) but the water extract was not active. Their antimicrobial testing revealed that the ethanol extract demonstrated good antifungal activity against several fungal strains, but the water extract was inactive. Likewise, ethanol extracts evidenced better antiviral actions than those water-based. Neither the ethanol nor water extracts showed any antibacterial or antiyeast actions against the strains they tested.

While iporuru will probably long remain in the South American herbalist's and shaman's medicine chest of natural remedies, its use by the rest of the world will be limited until more people and practitioners learn of them and/or more research is performed. Very few iporuru products are sold here in the U.S., and it is only available through a handful of companies (which mostly include it in multi-herb combination formulas).

Documented Properties and Actions: Analgesic, anodyne, antiarthritic, antifungal, anti-inflammatory, antitumor, antiviral, aphrodisiac

Main Phytochemicals: Alchorneine, alkaloids, flavonols, flavones, phenols, saponins, sterols, tannins, and xanthonenes

Traditional Remedy: One-half to one cup of a standard bark decoction 1–3 times daily, or 3–5 ml of a standard bark tincture 2–3 times daily. Usually the leaves are prepared in standard infusions or cold macerations; therefore, powdered leaves in capsules, tablets, or stirred into liquids can be substituted (1–2 g, two or three times daily).

Contraindications: None known.

Drug Interactions: None known.

WORLDWIDE ETHNOBOTANICAL USES

Region	Uses
Amazonia	Aches (muscle), analgesic, anti-inflammatory, aphrodisiac, arthritis, colds, cough, diabetes, diarrhea, fertility, impotence, rheumatism
Canada	Arthritis, inflammation, muscle pains, rheumatism
Peru	Antibacterial, aphrodisiac, arthritis, colds, cough, diabetes, diarrhea, flexibility, hallucinogenic, impotence, muscle pains, osteoarthritis, rheumatism, sterility
U.S.	Athletic support, analgesic, anesthetic, antihistamine, anti-inflammatory, antimicrobial, anodyne, arthritis, bactericide, hypnotic, laxative, purgative
Venezuela	Wound

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Ethnomedical Information on Iporuru (*Alchornea castaneifolia*)

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Bark Canada	Used for rheumatism, arthritis and muscle pains. Anti-inflammatory.	ETOH Ext Oral	Human Adult	BJ1005
Bark Peru	Used to treat rheumatism, arthritis, colds and muscle pains.	Tincture Oral	Human Adult	L04137
Bark Peru	Used for diarrhea.	Tincture Oral	Human Adult	L04137
Bark Peru	Used as an hallucinogen. Added to the ayahuasca (<i>Banisteriopsis-psychoctic</i>) beverage.	Decoction Oral	Human Adult	M05165
Bark Peru	Used for diarrhea.	Decoction Oral	Human Adult	ZZ1005
Bark Peru	Used to relieve the symptoms of osteoarthritis and improve flexibility in movement and range of motion.	Not Stated	Human Adult	BJ1005
Bark Peru	Used for osteoarthritis.	Not Stated	Human Adult	ZZ1014
Bark + Root Peru	Used for rheumatism.	Not Stated	Human Adult	ZZ1045
Leaf Peru	Used for cough and rheumatism.	Decoction Oral	Human Adult	L04137 ZZ1027
Leaf Peru	Used to treat sterile women.	Not Stated	Human Female	ZZ1027
Leaf Peru	Used for painful joints.	Cataplasm External	Human Adult	ZZ1005
Leaf Peru	Used for arthritis, osteoarthritis, rheumatism and muscle pain. Considered antibacterial, an aphrodisiac and used in male geriatric treatment.	Not Stated	Human Adult	BJ1002
Leaf Stated Peru	Used to treat impotency and to reduce sugar in the blood and urine in diabetics.	Infusion Oral	Human Adult	BJ1017
Not Stated Peru	Used for hallucinogenic effect during shamanic training.	Decoction Oral	Human Adult	T08133
Not Stated Peru	Used as an aphrodisiac and for geriatric males.	Not Stated	Human Male	ZZ1041
Not Stated Peru	Used for soothing aching joints and improving flexibility, movement and range of motion. Used for recovery after battle and hard work.	Not Stated	Human Adult	BJ1004

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Not Stated Peru	Used to relieve the symptoms of osteoarthritis. Helps to increase flexibility in movement and range of motion.	Not Stated	Human Adult	ZZ1015
Not Stated Peru	Used to relieve the symptoms of osteoarthritis.	Not Stated	Human Adult	ZZ1016
Not Stated USA	Used to support muscle and joint structure in athletes.	ETOH Ext Oral	Human Adult	ZZ1067
Not Stated USA	Considered analgesic, hypnotic, anesthetic, anti-histamine, bactericide, purgative, anodyne, anti-inflammatory, antimicrobial, laxative and anti-arthritis.	Not Stated	Human Adult	BJ1003
Not Stated USA	Used by athletes for its ability to support muscle and joint structure.	Not Stated	Human Adult	BJ1004
Not Stated Venezuela	Used for wounds inflicted by the sting ray.	Cataplasm External	Human Adult	ZZ1005

Biological Activities for Extracts of Iporuru (*Alchornea castaneifolia*)

Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Not Stated Peru	Antiinflammatory Activity	ETOH(95%)Ext	IP Rat	Not Stated	Active	vs. carrageenan-induced pedal edema.	T03271
Stembark Peru	Antiinflammatory Activity	ETOH(100%)Ext	External Rat Male	0.8 mg	Active	vs. EPP-induced rat ear oedema.	L14626
Stembark Peru	Prostaglandin Synthesis Inhibition	ETOH(100%)Ext	Not Stated	100.0 mcg/ml	Active	vs. COX-1 catalyzed prostaglandin biosynthesis.	L14626
Bark Peru	Antibacterial Activity	ETOAC Ext ETOAC Ext H2O Ext H2O Ext	Agar Plate Agar Plate Agar Plate Agar Plate	1.0 mg 1.0 mg 1.0 mg 1.0 mg	Inactive Inactive Inactive Inactive	<i>Escherichia coli</i> <i>Staphylococcus aureus</i> <i>Escherichia coli</i> <i>Staphylococcus aureus</i>	T16253
Bark Peru	Antifungal Activity	ETOAC Ext ETOAC Ext ETOAC Ext ETOAC Ext H2O Ext H2O Ext H2O Ext H2O Ext	Agar Plate Agar Plate Agar Plate Agar Plate Agar Plate Agar Plate Agar Plate Agar Plate	0.25 mg/ml 0.25 mg/ml 0.5 mg/ml 1.0 mg/ml 1.0 mg/ml Not Stated Not Stated Not Stated	Active Active Active Active Active Inactive Inactive Inactive	<i>Microsporium gypseum</i> <i>Trichophytum gallinae</i> <i>Microsporium fulvum</i> <i>Microsporium canis</i> <i>Microsporium canis</i> <i>Microsporium fulvum</i> <i>Microsporium gypseum</i> <i>Trichophytum gallinae</i>	T16253
Bark Peru	Antiyeast Activity	ETOAC Ext ETOAC Ext H2O Ext H2O Ext	Agar Plate Agar Plate Agar Plate Agar Plate	1.0 mg 1.0 mg 1.0 mg 1.0 mg	Inactive Inactive Inactive Inactive	<i>Candida albicans</i> <i>Saccharomyces cerevisiae</i> <i>Candida albicans</i> <i>Saccharomyces cerevisiae</i>	T16253
Bark Peru	Antiviral Activity	ETOAC Ext H2O Ext	Cell Culture Cell Culture	LC50=0.30 mcg/ml LC50=<0.22 mcg/ml	Active Active	<i>Cytomegalovirus</i> - exposed to extract before infecting host cells.	T16253
Bark Peru	Antiviral Activity	ETOAC Ext H2O Ext	Cell Culture Cell Culture	LC50=>100. Mcg/ml LC50=>100. Mcg/ml	Inactive Inactive	<i>Cytomegalovirus</i> infected host cells exposed to extract.	T16253
Bark Peru	Antiviral Activity	ETOAC Ext H2O Ext	Cell Culture Cell Culture	LC50=>100. Mcg/ml LC50=>100. Mcg/ml	Inactive Inactive	<i>Sindbis virus</i> infected host cells exposed to extract.	T16253

Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Bark Peru	Antiviral Activity	ETOAC Ext H2O Ext	Cell Culture Cell Culture	LC50=<1.0 mcg/ml LC50=>100. Mcg/ml	Active Inactive	<i>Sindbis virus</i> exposed to extract before infecting host cells.	T16253
Bark Peru	Anticrustacean Activity	ETOAC Ext H2O Ext	Not Stated Not Stated	LC50=41.0 mcg/ml LC50=>1000 mcg/ml	Active Inactive	<i>Artemia salina</i> assay system - predicts antitumor activity.	T16253
Bark Peru	Crown Gall Tumor Inhibition	ETOAC Ext H2O Ext	Cell Culture Cell Culture	LC50=0.14 mcg/ml LC50=0.52 mcg/ml	Active Active	Assay system is intended to predict for antitumor activity.	T16253

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