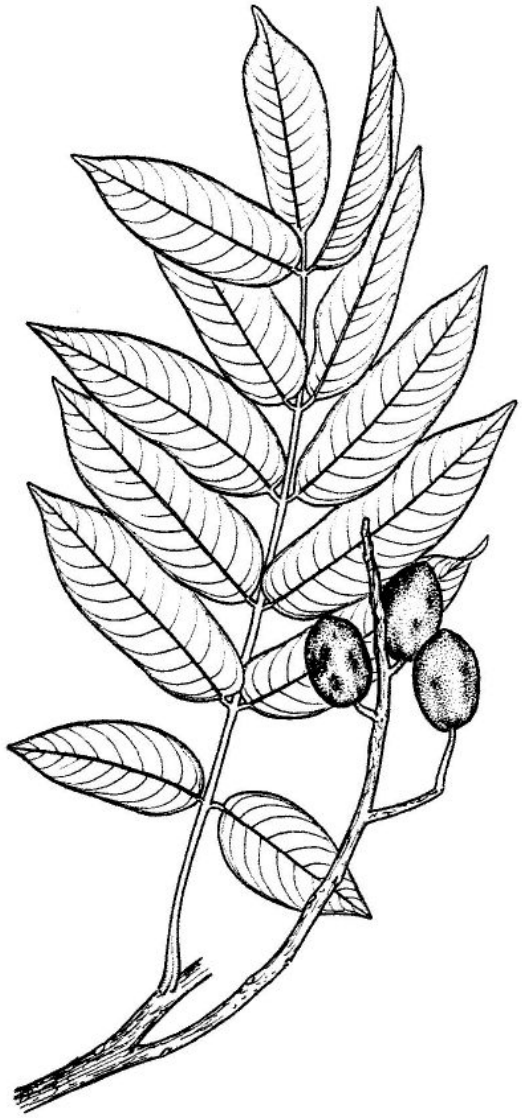
Technical Data Report

for

Ubos

(Spondias mombin)



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Ubos

Family: Anacardiaceae
Taxon: *Spondias mombin* L.
Synomyns: *Spondias lutea, S. aurantiaca, S. axillaris. S. cytherea, S. dubia, S. graveolens, S. lucida, S. myrobalanus, S. nigrescens, S. pseudomyrobalanus, S. purpurea, S. radlkoferi, S. venulosa, S. zansee*
Common names: acaiba, acaja, acaja, acajaiba, acaju ajuela, agria, binbish-sheshon, caja, caja-mirim, caja-pequeno, cajazeira, cajazeiro, cajazeiro-miudo, cancharana, cansa boca, canyarana, ciruela amarilla, diji, ciruela, ciruelo, hog plum, hubas, hubo, hubus, imbu, imbuzeiro, itahuba, Jamaica-plum, jobo, jocote, joshin heshon, marope, metsoqui, mombin, mompe, serigiiela, sheshon, sheson, shungi ushun, shungo, shungu, tapareba, tapereba, taperiba, taperiba ubo, tobo de la raontana, tronador, tsiyoroqui, ubos Colorado, ubos, ushum, ushun, uvo, xuxoon), yellow mombin, ylopo
Part Used: leaves, bark, root, flowers, fruit

Herbal Properties & Actions		
Main Actions:	**Other Actions:**	**Standard Dosage:** Bark
reduces inflammation	contraceptive	**Decoction:** 1 cup 2-3 times daily
relieves pain	kills bacteria	**Tincture:** 2 ml twice daily
reduces spasms		
kills fungi		
kills candida		
heals wounds		
heals rashes		
stops bleeding		

Herbal Properties & Actions		
Main Actions:	**Other Actions:**	**Standard Dosage:** Leaves
kills bacteria	calms & sedates	**Infusion:** 1 cup 2-3 times daily
kills viruses	kills parasites	**Capsules:** 1-2 g twice daily
reduces anxiety	relieves pain	
aids digestion	suppresses coughs	
kills candida		
stimulates uterus		
expels worms		
relieves convulsions		

Ubos is the Peruvian name for this tropical fruit tree. In the English-speaking tropics it is often called “hog plum.” This deciduous tree is erect and grows to 20 meters tall with a trunk 60-75 cm in diameter. The trunk is slightly buttressed and has a thick, fissured, corky, greyish bark. The leaves are 20-45 cm long and hairy underneath. The tree produces an abundant crop of small, fragrant, white flowers in panicles. Ubos also produces numerous plum-like fruits that hang in branched terminal clusters of a dozen or more. The fruit starts out green and then turns to a light golden-yellow upon ripening. They are about 3-4 cm long and 2.5 cm wide with a thin tough skin and a very juicy pulp which is very acidic and usually sour-tasting. The fruits are favored by tapirs and wild hogs where it grows in the wild, but the people in the area usually prepare it with sugar or sugarcane juice in jams, juices, and ice creams to counteract its tartness. One of its Indian

names is *taperiba* which means “fruit of the tapir,” and Indians in the Amazon will often hunt tapir using ubos fruit as bait.

Ubos is native to the lowland moist forests of the Amazon in Peru, Brazil, Venezuela, Bolivia, Colombia, the three Guianas, as well as southern Mexico, Belize, Costa Rica, and the West Indies. It is strictly tropical and rarely occurs above about 1,000 meters in elevation. While it is widely found in the rainy lowland rainforests of the Amazon, it has also adapted to grow in more arid zones of Brazil, Peru, and the Caribbean as well. The tree grows quite rapidly and is sometimes planted as living fence posts as well as for shade and for its fruits.

TRIBAL AND HERBAL MEDICINE USES

Ubos is widely relied on for various herbal remedies for numerous conditions and virtually every part of the tree is used—from its thick corky bark, to its leaves, fruits, roots, to even its flowers. Usually different properties and actions are attributed to different parts of the tree.

In South American herbal medicine systems as well as in other parts of the world ubos leaves are widely used for female reproductive tract issues. It is a common midwife’s remedy to help induce labor, reduce bleeding and pain during and after childbirth, to bring on the flow of breast milk, and as a vaginal wash to prevent or treat uterine or vaginal infections after childbirth. The leaves are also a common remedy for various digestive problems including stomachaches, diarrhea, dyspepsia, gastralgia, colic, and constipation. The leaves are considered to be antiviral, antibacterial, anticandidal, and antiseptic and used in numerous microbial problems including colds and flu, cystitis, urethritis, sore throats, herpes, yeast infections, gonorrhea, eye and ear infections, and used externally for infected wounds, cuts, burns, and rashes. The leaves are also considered to be an excellent vermifuge and anthelmintic and often used for intestinal worms and parasites in humans as well as their livestock.

The bark of the ubos tree is also employed by midwives. It is widely used as a contraceptive and abortive, as well as for ovarian and uterine cancer. It is considered analgesic and antispasmodic and used for arthritis, rheumatism, muscle and joint pain, injuries and inflammation. The bark contains a great deal of astringent tannins and is usually prepared in decoctions for diarrhea and dysentery, blenorrhagia, hemorrhoids, and for internal and external wounds and bleeding. In addition, the bark is also used for tonsilitis, laryngitis, malaria, fever, erysipelas, bladder and kidney stones, snakebite, and intestinal ulcers . The bark is also considered to be a good topical antiseptic and healing remedy for all types of wounds, rashes, psoriasis, dermatitis, leishmaniasis, leprosy, and other skin problems.

The many small fragrant flowers of ubos are also used in herbal medicine. They are typically prepared in an infusion and used for eye infections and cataracts, as a soothing tea for sore throat, laryngitis and mouth sores, as well as a heart tonic. The root is used as an antimicrobial for tuberculosis, diarrhea and vaginal infections. The fruit is eaten as a mild laxative but in large quantities it is considered to be emetic (induces vomiting).

PLANT CHEMICALS

Ubos leaves and bark contains tannins, saponins, flavonoids, sterols, quinones, and antioxidant chemicals. The leaves have been reported to contain several salicylic acid derivatives (aspirin is a type of salicylic acid) which probably explains the traditional use of the leaves for various types of pain. The bark and leaves also contains a well known chemical with pain-relieving actions called caryophyllene. The leaves are also a significant source of another chemical called chlorogenic acid. This natural plant chemical has been reported with antibacterial, antiviral, and anti-inflammatory actions.

BIOLOGICAL ACTIVITIES AND CLINICAL RESEARCH

Toxicity studies with mice and rats were performed on ubos in several published studies. The leaves were reported non-toxic in animals when administered orally (up to 5 g per kg of an animal's weight).[1] Toxicity was noted however when animals were injected with a leaf extract (LD50 was between 1.36 and 1.86 gm / kg).[1, 2] The use of ubos leaves by midwives has been studied and reported over several years. It was reported with uterine stimulant actions as well as abortive effects in three studies with laboratory animals (mice and guinea pigs).[2 - 4] Ubos leaves were also reported with smooth muscle relaxant actions,[4] uterine antispasmodic,[5] sedative and anticonvulsant actions,[6] and anti-anxiety actions[1] in other animal studies which help validate some of its other traditional uses. In addition, ubos leaves have long been used traditionally to treat parasitic and intestinal worms in humans and animals. One research group administered the leaves (2 doses of 500 mg per kg in body weight) to sheep with confirmed intestinal worms and reported that it reduced fecal egg counts by 54% for *Strongyloides*, 65% for *Oesophagostomum*, and 100% for *Tichuris* parasites.[7] They also reported it directly killed these parasites in their test tube studies.

In other test tube studies, ubos leaves have been reported with antioxidant actions,[8,9] antibacterial actions,[9-12] antiviral actions,[13-16] anti-candidal actions,[9,10,12] and hemostatic actions.[17] One study indicated that ubos leaves had the ability to inhibit beta-lactamase—an enzyme produced by certain bacteria that inactivates penicillin and results in resistance to that antibiotic.[18] Its reported antiviral actions (against Herpes, HIV, cocksacie, poliovirus, and rotoviruses) might be explained by reports that ubos has the ability to inhibit reverse transcriptase—a chemical required by many viruses to replicate.[8]

The bark and/or stembark of ubos has also been studied by scientists. It was reported with anti-inflammatory actions in an animal study with rats[19] which might be explained by another study reporting that ubos had COX-inhibitor actions *in vitro* (an enzyme involved in the creation of inflammation in the body).[8] The bark has also been reported with antibacterial actions in test tube studies but was not as effective as the leaves.[10, 20] It was also reported to inhibit human rotovirus by 82% *in vitro* which might explain its long standing use for diarrhea.[15] Other *in vitro* testing researchers also reported that ubos bark has strong antifungal and anti-candidal actions.[10, 12, 20]

Ubos bark and leaves have both been studied for their antitumorous and anticancerous effects. Extracts of both the leaves and bark passed an initial screening test to predict anti-tumor actions in two analyses.[10, 21] During the same time university students at Cornell University testing the bark *in vitro* against colon and skin cancer cell lines reported no cytotoxic effect.[20] However, university researchers in Nigeria reported in 2002 that rats fed with ubos bark had a much lower rate of tumor incidence over the control group when fed a carcinogenic diet and reported that ubos bark had a anticancerous effect in their animal studies.[22]

In 2002, a U.S. patent was filed on a cosmetic product that contained an extract of ubos leaves. In the patent, the French researchers indicated that ubos leaves had de-pigmenting, antioxidant, anti-aging, cellular metabolism stimulation, and sunscreen effects for the skin.[23]

CURRENT PRACTICAL USES

Ubos is widely known in the tropics where it grows however American consumers are just now learning about it. There are only one or two U.S.-made products available currently. Consumers should pay attention to which part of the tree is being marketed since the leaves and bark have different properties, actions, and traditional uses. In South America the bark is considered a good anti-inflammatory and analgesic and used for inflamed and painful conditions like arthritis, rheumatism, and skin rashes, while the leaves are a common remedy for digestive and female complaints as well as an antimicrobial for infections conditions.

Ubos Leaves Plant Summary
Main Actions (in order): antibacterial, antiviral, anthelminthic, stomachic, anti-anxiety
Main Uses: 1. as a broad spectrum antiseptic and antibacterial 2. for viruses 3. for intestinal worms and parasites 4. as a menstrual regulator and for menstrual pain, cramps and irregularity, vaginal infections and yeast infections. 5. as a nervine; for stress and anxiety
Properties/Actions Documented by Research: abortifacient, anthelmintic, antibacterial, anticandidal, anticarcinogenic, anticonvulsant, antidopaminergic, antifungal, antioxidant, antispasmodic, antiviral, anti-yeast, anxiolytic, cytotoxic, smooth muscle relaxant, hemostatic, sedative, and uterine stimulant
Other Properties/Actions Documented by Traditional Use: abortifacient, anthelmintic, antibacterial, antiseptic, antispasmodic, antitussive, antiviral, astringent, diuretic, hemostat, lactagogue, oxytocic, refrigerant, stimulant, stomachic, tonic, vermifuge, and vulnerary
Cautions: Do not use if pregnant. Do not use if allergic to aspirin.

Ubos Bark Plant Summary
Main Actions (in order): anti-inflammatory, analgesic, antispasmodic, vulnerary, antimicrobial
Main Uses: 1. as an anti-inflammatory for arthritis, muscle and joint injuries, etc. 2. as a pain-reliever for various types of internal and external pains 3. as an astringent and antiseptic wound healer for rashes, cuts, wounds, abrasions and other skin conditions 4. for rotoviral diarrhea and dysentery 5. for ovarian and uterine cancer
Properties/Actions Documented by Research: antibacterial, anti-candidal, anti-carcinomic, antifungal, anti-inflammatory, anti-viral, COX-inhibitor, cytotoxic, and uterine stimulant
Other Properties/Actions Documented by Traditional Use: abortive, analgesic, anti-arthritic, antibacterial, anticancerous, antidysenteric, anti-inflammatory, anti-rheumatic, antiseptic, antiulcerous, antiviral, astringent, cicatrizant, contraceptive, hemostat, and vulnerary
Cautions: Do not use if pregnant or seeking to become pregnant.

Traditional Preparation: Ubos leaves are traditionally prepared in infusions while the bark is typically prepared in decoctions or tinctures.

Contraindications:

- Ubos leaves are traditionally used as a childbirth aid to induce labor and as an abortive. Animals studies report uterine stimulant and abortive actions. Do not use if you are pregnant unless under the direct supervision of a medical practitioner.
- Ubos bark is traditionally used as a contraceptive. While no animal or human studies

support this traditional use, women seeking to become pregnant should probably avoid use of this plant.

- Ubos leaves contains salicylic acid derivatives. If allergic or sensitive to aspirin or salicylic acid, avoid use of the leaves.

Drug Interactions: None reported. Animal studies document ubos leaves with sedative and anti-anxiety effects and as such, the leaves might enhance the effect of other sedative and anti-anxiety medications.

WORLDWIDE ETHNOMEDICAL USES	
Africa	for bleeding, childbirth, chronic diarrhea, constipation, coughs, diarrhea, fever, gonorrhea, postpartum hemorrhage, stomach problems, tapeworm, and yaws
Belize	for diarrhea, dysentery, gonorrhea, inflammation, insect bites, sores, sore throat, rashes, weakness, and wounds
Bolivia	for injuries and wounds
Brazil	as an anthelmintic, antibacterial, anti-inflammatory. antispasmodic, antiviral, astringent, diuretic, emetic, molluscicidal, refrigerant, stimulant, stomachic, tonic, and vermifuge; for angina, blenorrhagia, childbirth complications, colic, constipation, cystitis, debility, diarrhea, dysentery, dyspepsia, erysipelas, eye problems, eye infections, fever, gastralgia, gonorrhea, heart tonic, heart palpitations, hemorrhoids, herpes, intestinal worms, laryngitis, malaria, mouth inflammation, prostatitis, sore throat, stomach pain, stomach ulcers, tonsilitis, sore throat, urethritis, uterine disorders, vaginal infections, vaginal disorders, and weakness
Colombia	as a contraceptive; for diarrhea, menstrual disorders, vaginal infections, and wounds
Cuba	for uterine cancer
Guianas	for colds, coughs, diarrhea, dysentery, eye infections, fatigue, gonorrhea, hemorrhages, mouth sores, sores, stomachache, wounds, and as an abortifacient
Haiti	as a laxative; for coughs, gonorrhea, ophthalmia, sore throat, and urethritis
Mexico	for bladder problems, dysentery, and kidney stones
Nicaragua	for diarrhea, fever, infections, skin rashes, sores, and wounds
Nigeria	as an abortifacient, anti-inflammatory, childbirth aid, diuretic, expectorant, febrifuge, hemostat, laxative, and oxytocic (induces labor); for burns, childbirth, cholera, cough, cuts, diarrhea, dizziness, eye ailments, fever, gonorrhea, malignant tumors, nervous disorders, sore throat, sores, stomach pains, tapeworm, thrush, wounds, and yaws
Peru	as an analgesic, antibacterial, antiseptic, antispasmodic, astringent, cicatrizant, contraceptive, hemostat, stomachic, and vulnerary; for anemia, asthma, bacterial infections, blenorrhagia, cataracts, childbirth aid, childbirth, cuts, cystitis, cysts, debility, dehydration, dermatitis, diarrhea, digestive problems, dysentery, erysipelas, erythema, excessive menstrual bleeding, female reproductive tract disorders, fevers, fungal infections, gastritis, genital disorders, heat rash, hemorrhages, hemorrhoids, herpes, infections, intestinal ulcers, kidney problems, laryngitis, leishmaniasis, menstrual pain, ovarian cancer, postpartum infections, psoriasis, rashes, renal problems, skin fungi, skin eruptions, snakebite, sore throat, stomach problems, stomach pain, tonsilitis, tuberculosis, ulcers, urethritis, uterine problems, vaginal problems, vaginal infections, wounds, and yeast infections

WORLDWIDE ETHNOMEDICAL USES	
Trinidad	as an astringent, and gargle; for colds, diarrhea, erysipelas, nephritis, sores, sore throat, and thrush
Venezuela	for coughs, diarrhea, dysentery, pertussis, skin lesions, and stomachaches
Elsewhere	for childbirth, colds, coughs, diarrhea, dysentery, edema, gonorrhea, hemorrhoids, leprosy, leucorrhea, urethritis, and wounds

References:

1. Ayoka, A., et al. "Studies on the anxiolytic effect of *Spondias mombin* L. (Anacardiaceae) extracts." *J. Trad. CAM*. 2005: 2(2): 153-165.
2. Offiah, V., et al. "Abortifacient activity of an aqueous extract of *Spondias mombin* leaves." *J. Ethnopharmacol* 1989; 26(3): 317-320.
3. Barros, G., et al. "Pharmacological screening of some Brazilian plants." *J. Pharm. Pharmacol.* 1970; 22: 116.
4. Akubue, P., et al. "Preliminary pharmacological study of some Nigerian medicinal plants." *J. Ethnopharmacol.* 1983; 8(1): 53-63.
5. Uchendu, C., et al. "Spasmogenic activity of butanolic leaf extract of *Spondias mombin* in isolated uterine muscle of the rat: role of calcium. *J. Nat. Remedies* 2005; 5(1): 7-14.
6. Ayoka, A., et al. "Sedative, antiepileptic and antipsychotic effects of *Spondias mombin* L. (Anacardiaceae) in mice and rats." *J. Ethnopharmacol.* 2006 Jan; 103(2): 166-75.
7. Ademola, I., et al. "Anthelmintic activity of extracts of *Spondias mombin* against gastrointestinal nematodes of sheep: Studies in vitro and in vivo." *So. Trop Anim, Health Prod*. 2005 Apr; 37(3): 223-35.
8. Calderon, A., et al. "Forest plot as a tool to demonstrate the pharmaceutical potential of plants in a tropical forest of Panama." *Econ. Bot.* 2000; 54(3): 278-294.
9. Kramer, A., et al. "Ethnobotany and biological activity of plants utilized during pregnancy and childbirth in the Peruvian Amazon." *Emanations from the Rainforest and the Carribean* VOL. 4 Sept. 2002, Cornell University.
10. Flood, K., et al. "Phytochemical analysis of *Cedrela odorata* and *Spondias mombin*, two dietary sources of *Callithrix pygmea* on the Yarapa river in the Amazon basin of Peru." *Emanations from the Rainforest and the Carribean* VOL. 4 Sept. 2002, Cornell University.
11. Ajao, A., et al. "Antibacterial effect of aqueous and alcohol extracts of *Spondias mombin*, and *Alchornea cordifolia* - two local antimicrobial remedies." *Int. J. Crude Drug Res.* 1985; 23(2): 67-72.
12. Abo, K., et al. "Antimicrobial potential of *Spondias mombin*, *Croton zambesicus* and *Zygotritonia crocea*." *Phytother. Res.* 1999; 13(6): 494-497.
13. Corthout, J., et al. "Antivirally active substances from *Spondias mombin* L. (Anacardiaceae)." *Abstr. Internat. Res. Cong. Nat. Prod. Coll Pharm. Univ*. July 7-12 1985 Abstr. - 53. N. Carolina University, Chapel Hill, NC
14. Corthout, J., et al. "Antivirally active substances from *Spondias mombin* L." *Pharm. Weekbl*. 1987; 9(4): 222.
15. Goncalves, J., et al. "In vitro anti-rotavirus activity of some medicinal plants used in Brazil against diarrhea." *J. Ethnopharmacol.* 2005 Jul; 99(3): 403-7.
16. Corthout, J. et al. "Antiviral caffeoyl esters from *Spondias mombin*." *Phytochemistry* 1992; 31(6): 1979-1981.
17. Ramirez, V., et al., "Vegetales empleados en medicina tradicional Norperuana." *Banco Agrario Del Peru & Nacl Univ Trujillo*, Trujillo, Peru, June, 1988 Page 54.
18. Coates, N., et al. "SB-202742, A novel beta-lactamase inhibitor isolated from *Spondias mombin*." *J. Nat. Prod.* 1994; 57(5): 654-657.
19. Abad, M., et al. "Antiinflammatory activity of some medicinal plant extracts from Venezuela". *J. Ethnopharmacol.* 1996; 55: 63-68.
20. Herforth, A., "Anti-fungal plants of the Peruvian Amazon: A survey of ethnomedical uses and biological activity." *Emanations from the Rainforest and the Carribean.* VOL. 4 Sept. 2002, Cornell University.

21. Quignard, E., et al. “Screening of plants found in Amazonas state for lethality towards brine shrimp.” *Acta Amazonica.* 2003; 33(1): 93-104.
22. Idu, M., et al. “Studies on the nutritional value and anti-tumour property of the bark of *Spondias mombin* L.” *J. Med. Biomed. Res.* 2002; 1(2): 223-228.
23. Pauly, G., et al. “Cosmetic containing plant extracts.” U.S. Patent No. 6,406,720. June 18, 2002

Ethnomedical Information on Ubos (Spondias mombin)

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Bark - Africa	Bark and/or leaves used for coughs, fever, constipation, yaws, gonorrhea, tapeworm, stomach problems, and as a childbirth aid.	Infusion / Oral	Human Adult	W01316
Bark - Bolivia	Used for wounds and injuries.	Poultice / External	Human Adult	ZZ2007
Bark - Brazil	Used for malaria.	Infusion / Oral	Human Adult	L15570
Bark - Brazil	Used for malaria, fever, diarrhea, and vaginal infections.	Not stated	Human Adult	ZZ1071
Bark - Brazil	Used as a astringent, anti-inflammatory, stomachic, anthelmintic, vermifuge and antispasmodic; for diarrhea, dysentery, and hemorrhoids.	Decoction / Oral	Human Adult	ZZ1072
Bark - Brazil	Used for tonsilitis and sore throat.	Infusion / Oral	Human Adult	ZZ1002
Bark - Brazil	Used as an antispasmodic, astringent, tonic, emetic; for diarrhea, gonorrhea, and hemorrhoids. Used to reduce swelling in the feet caused by erysipelas.	Decoction / Oral Decoction / External	Human Adult	ZZ1099
Bark - Brazil	Used as an astringent and emetic; for fever, diarrhea, dystentery, blenorrhagia, and hemorrhoids.	Decoction / Oral	Human Adult	ZZ1079
Bark - Brazil	Used as an emetic, astringent, tonic, and stimulant; for colic, stomach problems, erysipelas, and blenorrhagia.	Decoction / Oral Decoction / External	Human Adult	ZZ1002
Bark - Brazil	Used as an astringent, emetic; for diarrhea, dystentery, blenorrhagia, and hemorrhoids.	Decoction / Oral	Human Adult	ZZ1013
Bark - Caribbean	Used as an antiviral, myorelaxant, and uterotonic.	Not stated	Human Adult	L04137 ZZ1033 ZZ1106
Bark - Colombia	Tikuna Indians use it as an contraceptive, analgesic and hemostat; for diarrhea, metrorrhagia and stomachache.	Decoction / Oral	Human Adult	L04137 ZZ1005 ZZ2007 ZZ1106
Bark - Colombia	Used as a contraceptive and for menstrual disorders.	Infusion / Oral	Human Adult	A00709

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Bark - Colombia	Used for diarrhea and vaginal infections.	Not stated	Human Adult	ZZ2010
Bark - Colombia	Used as a contraceptive.	Infusion / Oral	Human Adult	T15375
Bark - Colombia	Used as a wash for wounds.	Decoction / External	Human Adult	ZZ1005
Bark - Cuba	Used for uterine cancer.	Decoction / Douche	Human Adult	W00113 ZZ1033
Bark - Guianas	Used for coughs and colds. Used for hemorrhages and sores.	Decoction / Oral Decoction / External	Human Adult	ZZ1104
Bark - Guinea	Used for leprosy.	Decoction / External	Human Adult	W00113
Bark - Guinea	Used for coughs.	Not stated / Oral	Human Adult	A04079
Bark - Guyana	Creoles use it for diarrhea and stomachaches.	Decocotion / Oral	Human Adult	L01437 ZZ1033
Bark - Haiti	Used for urethritis.	Infusion / Oral	Human Adult	T15375
Bark - Mexico	Used by the Mayas for dysentery.	Decoction / Oral	Human Adult	W01316
Bark - Mexico	Used for bladder and kidney stones.	Decoction / Oral	Human Adult	SM2001
Bark - Nicaragua	Used for fever, diarrhea and infections. Used for skin rashes and sores.	Decoction / Oral Decoction / External	Human Adult Human Adult	L17008
Bark - Nicaragua	Garifuna Indians use it for fever, infections, diarrhea and skin rashes.	Decoction / Oral	Human Adult	K27070
Bark - Peru	Shipibo-Conibo Indians use it as a cicatrizant, hemostat, astringent, vaginal wash, and antibacterial; for wounds, debility, dehydration, diarrhea and infections.	Decoction / Oral Decoction / External	Human Adult	ZZ2003
Bark - Peru	Used for vaginal infections and following an abortion or miscarriage.	Infusion / Douche	Human Adult	L17008
Bark - Peru	Used for ovarian cancer.	Infusion / Oral	Human Adult	L17008
Bark - Peru	Used as an antispasmodic, astringent, analgesic, contraceptive and stomachic; for asthma, diarrhea, vaginal infections, erythema, cysts, laryngitis, menstrual pain and psoriasis.	Infusion / Oral	Human Adult	ZZ1105

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Bark - Peru	Resin extracted from the bark and used as a vulnerary and cicatrizant for wounds.	Resin / External	Human Adult	ZZ1008 ZZ1101 ZZ2011
Bark - Peru	Used as a contraceptive.	Infusion / Oral	Human Adult	ZZ2011
Bark - Peru	Used for tuberculosis, diarrhea, and intestinal ulcers.	Decoction / Oral	Human Adult	ZZ2011
Bark - Peru	Combined with cedar, cashew, and guava leaves and used for vaginal infections and wounds.	Decoction / Douche	Human Adult	ZZ1008
Bark - Peru	Used as an astringent; for female reproductive tract and genital disorders. Used as a contraceptive.	Decoction / Oral	Human Adult	ZZ1093
Bark - Peru	Used for yeast infections, fungal infections, and skin fungi.	Decoction / Oral	Human Adult	SM2011
Bark - Peru	Powdered bark is used on the site of a snakebite.	Powder / External	Human Adult	ZZ1008 ZZ1101
Bark - Peru	Powdered bark is used as a hemostat for cuts, wounds, and hemorrhages. Used as an antiseptic wash for wounds. Taken for diarrhea and intestinal ulcers.	Powder / External Decoction / External Decoction / Oral	Human Adult	ZZ2009
Bark - Peru	Used as a hemostat and vulnerary for wounds. Used for erysipelas, leishmaniasis, and vaginal infections.	Powder / External Decoction / External	Human Adult	ZZ1101 ZZ2011
Bark - Peru	Used as an antispasmodic, contraceptive, and stomachic; for blenorrhagia, hemorrhoids, digestive problems, dermatitis, diarrhea, erythema, cysts, laryngitis, psoriasis, menstrual pain, intestinal ulcers, vaginal infections, and tuberculosis.	Decoction / Oral	Human Adult	ZZ1101
Bark - Peru	Campa-Ashaninca Indians use it as an astringent; for cutaneous leishmaniasis.	Powdered / External	Human Adult	ZZ2007
Bark - Peru	Used for wounds. Used as an antiseptic vaginal wash. Used for gastritis, dysentery, stomach pain, renal and kidney problems, hemorrhoids, blenorrhagia, herpes, diarrhea, menstrual pain, excessive menstrual bleeding, ulcers, uterine problems, and vaginal problems. Used as a contraceptive, and for internal and external hemorrhages.	Poultice / External Decoction / Douche Decoction / Oral	Human Adult	ZZ2013
Bark - Upper Volta	Used for leprosy.	Not stated	Human Adult	W00113

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Bark - Venezuela	Warao Indians use it for diarrhea, cough, pertussis, stomachache, skin lesions, and dysentery.	Decoction / Oral	Human Adult	K27038
Bark - Various	Used in the tropics as an astringent; for diarrhea, dysentery, hemorrhoids, gonorrhea and leucorrhea. Used to heal wounds.	Decoction / Oral Powder / External	Human Adult	SM2001
Stembark - Guianas	Used as a sudorific; for gonorrhea, diarrhea, stomachache, and fatigue.	Infusion / Oral	Human Adult	ZZ1104
Bark/Leaf - Belize	Used for sores, rashes, and insect stings.	Decoction / External	Human Adult	ZZ1019
Bark/Leaf - Jamaica	Used for edema.	Infusion / Oral	Human Adult	W01316
Bark/Leaf - Peru	Used for anemia.	Decoction / Oral	Human Adult	ZZ2013
Bark/Leaf - Peru	Used for diarrhea.	Decoction / Oral	Human Adult	ZZ2011
Leaf - Belize	Used for diarrhea and dysentery. Used for wounds and inflammations.	Decoction / Oral Poultice / External	Human Adult	SM2001
Leaf - Brazil	Used for gastralgia, dyspepsia, and diarrhea.	Decoction / Oral	Human Adult	ZZ1072
Leaf - Brazil	Used internally and externally as an antiviral for herpes.	Infusion / Oral Infusion / External	Human Adult	ZZ1078
Leaf - Brazil	Used for constipation, gastralgia, and laryngitis. Used for eye infections.	Infusion / Oral Infusion / Ocular	Human Adult	ZZ1099
Leaf - Brazil	Used as an astringent, antibacterial, molluscicidal, and antiviral: for angina, laryngitis, mouth inflammation, tonsilitis, prostatitis, and herpes.	Infusion / Oral	Human Adult	ZZ2005
Leaf - Brazil	Used for fever, constipation, stomach pain, childbirth complications, pain in the eye and ears, and as a stomachic and refrigerant.	Infusion / Oral	Human Adult	ZZ1079
Leaf - Brazil	Used for stomach pain, constipation, fever, cystitis, urethritis, sore throat, laryngitis.	Not stated / Oral	Human Adult	ZZ1013
Leaf - Cameroon	Used for chronic diarrhea.	Decoction / Oral	Human Adult	L15725
Leaf - Dominca	Used after childbirth to induce lactation.	Infusion / Oral	Human Adult	W01267
Leaf - Ghana	Used to stop postpartum hemorrhage.	Plant / Oral	Sheep & Goats	A04240

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Leaf - Guadeloupe	Used to facilitate childbirth and speed delivery.	Decoction / Oral	Human Adult	T07660
Leaf - Guatemala	Used for gonorrhea.	Infusion / Oral	Human Adult	K27236
Leaf - Guianas	Used for diarrhea, dysentery, and in an abortifacient preparation. Used for hemorrhages and sores.	Decoction / Oral Decoction / External	Human Adult	ZZ1104
Leaf - Ivory Coast	Used as a hemostatic.	Leaves / External	Human Adult	T15327
Leaf - Jamaica	Used as a cold remedy.	Decoction / Internal	Human Adult	W01316
Leaf - Mali	Decoction drunk or used as a lotion during the course of childbirth.	Decoction / Various	Human Adult	A00708
Leaf - Nicaragua	Used for diarrhea.	Decoction / Oral	Human Adult	K26492
Leaf - Nigeria	Used for tapeworms, malignant tumors and to aid childbirth.	Decoction / Oral	Human Adult	W00113
Leaf - Nigeria	Used as a laxative and as a child birth aid (to stop bleeding during late pregnancy, to stop bleeding, labor pains and stomach pains after childbirth).	Decoction / Oral	Human Adult	T09679 T08806
Leaf - Nigeria	Used as an oxytocic (induces childbirth) and to expel placenta.	Decoction / Oral	Human Adult	T16089
Leaf - Nigeria	Used as an abortifacient and for diarrhea.	Decoction / Oral	Human Adult	T07675
Leaf - Nigeria	Used as a febrifuge, astringent, diuretic and laxative; for cholera, thrush, gonorrhea, dizziness, cough, fever, yaws, sore throat, cough, diarrhea, tapeworm, and fever. Use for eye ailments, cuts, sore, wounds, and burns.	Decoction / Oral Infusion / External	Human Adult	SM2012
Leaf - Nigeria	Used for various nervous disorders.	Tincture / Oral	Human Adult	SM2008
Leaf - Peru	Used for postpartum infections of the uterus, yeast infections, bacterial infections, and as a childbirth aid.	Decoction / Oral	Human Adult	SM2009
Leaf - Peru	Used for heat rash.	Infusion / External	Human Adult	ZZ2009
Leaf - Peru	Used as an antiseptic wash for wounds.	Infusion / External	Human Adult	ZZ1101 ZZ1105 ZZ2011
Leaf - Peru	Used for illnesses of the throat and tonsils.	Infusion / Oral	Human Adult	ZZ1093

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Leaf - Peru	Used for dysentery, diarrhea, vaginal infections, and stomach problems. Used for dermatitis, rashes and skin eruptions.	Decoction / Oral Infusion / External	Human Adult	ZZ1101 ZZ2011
Leaf - West Indies	Used for diarrhea.	Decoction / Oral	Human Adult	T00701
Leaf/Stem - Guianas	Used as an eyewash.	Decoction / Ocular	Human Adult	ZZ1104
Leaf/Flower - Various	For stomachache, biliousness, urethritis, cystitis, eye inflammation, and throat inflammation.	Infusion / Oral	Human Adult	SM2001
Fruit - Brazil	Used for angina, stomach ulcers, vaginal and uterine disorders.	Juice / Oral	Human Adult	ZZ1002
Fruit - Brazil	Eaten as a food. Used on ice creams, liqueurs, jams, etc.	Fruit / Oral	Human Adult	W04467 L04137 ZZ1039 ZZ1002
Fruit - Brazil	Fruit juice taken for fevers, cystitis, and urethritis.	Juice / Oral	Human Adult	ZZ1072 ZZ1099 ZZ1079
Fruit - Brazil	Fruit or juice taken as a heart tonic.	Fruit / Oral	Human Adult	ZZ1013
Fruit - Cameroon	Used for chronic diarrhea.	Fruit / Oral	Human Adult	L15725
Fruit - Ecuador	Eaten as a food.	Fruit / Oral	Human Adult	L14706
Fruit - Guianas	Fresh fruit eaten as a mild laxative. Stewed and eaten for diarrhea.	Fruit / Oral	Human Adult	ZZ1104
Fruit - Nigeria	Used as a febrifuge, anti-inflammatory and expectorant.	Fruit / Oral	Human Adult	T06510
Fruit - Panama	Eaten as a food.	Fruit / Oral	Human Adult	ZZ1098
Fruit - Peru	Used as a vomitive and an astringent.	Decoction / Oral	Human Adult	T15323
Fruit - Peru	Used for healing wounds.	Decoction / External	Human Adult	L12623
Fruit - Peru	Campa-Ashaninca Indians use it as tapir bait when hunting.	Fruit / Oral	Tapir	L04137 ZZ1005
Fruit - Peru	Eaten in large quantities it is vomitive. Skin of fruit is astringent. Fruit or juice taken for anemia.	Fruit / Oral Fruit skin / External Fruit / Oral	Human Adult	ZZ1101

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Fruit - Peru	Eaten as a food.	Fruit / Oral	Human Adult	ZZ1105 ZZ1084 ZZ1093 ZZ2013
Fruit - Peru	In large quantities it is an emetic. Eaten for anemia.	Fruit / Oral	Human Adult	ZZ2010
Fruit - Peru	Fruit juice taken for fevers, cystitis, and urethritis.	Juice / Oral	Human Adult	ZZ2013
Flowers - Jamaica	Used for colds.	Infusion / Oral	Human Adult	W01316
Flowers - Belize	Used as an astringent for diarrhea, gonorrhea, and sore throat.	Decoction / Oral	Human Adult	ZZ1019
Flowers - Brazil	Used as a cardiac tonic for debility, weakness, and heart palpitations.	Infusion / Oral	Human Adult	ZZ1002
Flowers - Brazil	Used for eye infections. Used heart conditions, laryngitis, children's diarrhea and as a stomachic.	Infusion / Ocular Infusion / Oral	Human Adult	ZZ1099
Flowers - Guianas	Used for mouth sores.	Infusion / Oral	Human Adult	ZZ1104
Flowers - Peru	Used for cataracts.	Infusion / Ocular	Human Adult	ZZ1101
Root+Leaf - Guatemala	Used for gonorrhea.	Infusion / Oral	Human Adult	K27236
Root - Guianas	Used for dysentery.	Infusion / Oral	Human Adult	ZZ1105
Root - Peru	Used to treat tuberculosis, diarrhea, and as a childbirth aid. Used as an adjunctive with antibiotics.	Decoction / Oral	Human Adult	L04137
Root - Peru	Used for vaginal infections and hemorrhoids.	Decoction / Not stated	Human Adult	L04137 ZZ2027 ZZ2007
Root - Peru	Used as a gastric analgesic.	Decoction / Oral	Human Adult	ZZ1101
Seed - Brazil	Used as a diuretic for urinary and bladder problems.	Infusion / Oral	Human Adult	ZZ1002
Seed - Brazil	Used for leucorrhea.	Decoction / Oral	Human Adult	ZZ1099
Gum - Various	Used as an expectorant and to expel tapeworms.	Not stated / Oral	Human Adult	SM2001

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Plant - Haiti	Used as a laxative; for coughs, gonorrhea, ophthalmia, sore throat, and urethritis.	Not stated	Human Adult	ZZ1022
Plant - Panama	Cuna Indians use it for asthma, colds, and congestion.	Not stated	Human Adult	ZZ1022
Plant - Trinidad	Used as an astringent, and gargle; for colds, diarrhea, erysipelas, nephritis, sores, sore throat, and thrush.	Not stated	Human Adult	ZZ1022
Plant - Various	Used as an analgesic, astringent, diuretic, laxative, and vermifuge; for asthma, cancer, colds, congestion, cough, diarrhea, erysipelas, fever, gonorrhea, leprosy, malignancy, nephritis, ophthalmia, sore, swelling, thrush, tumors, urethritis, and wounds.	Not stated	Human Adult	ZZ1106 ZZ1022

Presence of Compounds in Ubos (Spondias mombin)

Compound	Chemical Type	Plant Part	Plant Origin	Quantity	Ref #
Ascorbic acid	Vitamin	Fruit	Nigeria	165.8 mg/g	M09539
Benzaldehyde	Benzenoid	Fruit	Nigeria	Not stated	M30164
Benzene, 4-allyl-1-2-3-trimethoxy:	Benzenoid	Fruit	Nigeria	Not stated	M30164
Benzene, 5-allyl-1-2-3-trimethoxy:	Phenylpropanoid	Fruit	Nigeria	Not stated	M30164
Benzoic acid butyl ester	Benzenoid	Fruit essential oil Fruit	Mexico Nigeria	00.1% Not stated	K13190 M30164
Benzoic acid ethyl ester	Benzenoid	Fruit essential oil	Mexico	03.2%	K13190
Benzoic acid methyl ester	Benzenoid	Fruit essential oil Fruit	Mexico Nigeria	00.8% Not stated	K13190 M30164
Benzoic acid phenyl-methyl ester	Benzenoid	Fruit	Nigeria	Not stated	M30164
Benzoic acid, 6-heptadeca-cis-8-cis-11-cis-14-trienyl)-2-hydroxy:	Benzenoid	Leaf + Twigs	Ghana	00.016%	H14218
Benzyl acetate	Benzenoid	Fruit	Nigeria	Not stated	M30164
Benzyl butanoate	Benzenoid	Fruit	Nigeria	Not stated	M30164
Benzyl butyrate	Benzenoid	Fruit essential oil	Mexico	00.2%	K13190
Bergamotene, alpha: cis:	Sesquiterpene	Fruit essential oil	Mexico	00.1	K13190
Bergamotene, alpha: trans:	Sesquiterpene	Fruit essential oil	Mexico	03.1%	K13190
Bisabolene, beta:	Sesquiterpene	Fruit essential oil	Mexico	01.6%	K13190
Bisabolol, alpha:	Sesquiterpene	Fruit essential oil	Mexico	00.2%	K13190
Butan-1-al	Alkanol to C4	Fruit	Nigeria	Not stated	M30164
Butan-1-ol, 2-methyl:	Alkanol to C4	Fruit essential oil	Mexico	00.4%	K13190
Butan-1-ol, 3-methyl:	Alkanol to C4	Fruit essential oil	Mexico	02.4%	K13190

Compound	Chemical Type	Plant Part	Plant Origin	Quantity	Ref #
Butan-2-one, 3-methyl:	Alkanol to C4	Fruit	Nigeria	Not stated	M30164
Butanoic acid ethyl ester	Alkanol to C4	Fruit	Nigeria	Not stated	M30164
Butanoic acid hexyl ester	Alkanol to C4	Fruit	Nigeria	Not stated	M30164
Butanoic acid, 3-hydroxy: butyrate	Alkanol to C4	Fruit	Nigeria	Not stated	M30164
Butanoic acid, 3-hydroxy: ethyl ester	Alkanol to C4	Fruit	Nigeria	Not stated	M30164
Butanoic acid, 3-hydroxy: iso-butanoate	Alkanol to C4	Fruit	Nigeria	Not stated	M30164
Butanoic acid, 3-hydroxy: propanoate	Alkanol to C4	Fruit	Nigeria	Not stated	M30164
Butyl acetate	Alkanol to C4	Fruit essential oil	Mexico	01.1%	K13190
Butyl acetate, 3-methyl:	Alkanol to C4	Fruit essential oil	Mexico	00.3%	K13190
Butyl butyrate	Alkanol to C4	Fruit essential oil	Mexico	00.6%	K13190
Butyl butyrate, iso:	Alkanol to C4	Fruit essential oil	Mexico	00.6%	SM2002
Butyl, iso: acetate	Alkanol to C4	Fruit essential oil	Mexico	00.6%	K13190
Butyrate, isopentyl	Alkanol to C4	Fruit	Mexico	Not stated	SM2002
Butyrate, isopropyl	Alkanol to C4	Fruit	Mexico	Not stated	SM2002
Butyrate, propyl	Alkanol to C4	Fruit	Mexico	Not stated	SM2002
Butyric acid	Alkanol to C4	Fruit	Nigeria	Not stated	M30164
Cadinene, delta:	Alkanol to C4	Fruit essential oil	Mexico	01.3%	K13190
Cadinol, alpha:	Alkanol to C4	Fruit essential oil	Mexico	traces	K13190
Cadinol, delta:	Alkanol to C4	Fruit essential oil	Mexico	traces	K13190
Cadinol, T:	Alkanol to C4	Fruit essential oil	Mexico	00.6%	K13190
Caproic acid	Lipid	Fruit	Nigeria	Not stated	M30164
Caproic acid butyl ester	Alkane C5 or More	Fruit	Nigeria	Not stated	M30164

Compound	Chemical Type	Plant Part	Plant Origin	Quantity	Ref #
Caproic acid ethyl ester	Lipid	Fruit	Nigeria	Not stated	M30164
Caprylic acid ethyl ester	Lipid	Fruit	Nigeria	Not stated	M30164
Caryophyllene oxide	Sesquiterpene	Fruit	Nigeria	Not stated	M30164
Caryophyllene, beta:	Sesquiterpene	Fruit essential oil	Mexico	01.4%	K13190
Caryophyllene-(E)	Sesquiterpene	Fruit	Brazil	18.7%	SM2005
Chlorogenic acid	Phenylpropanoid	Leaf Leaf + Stem	Belgium Not stated	Not stated Not stated	M31529 T13607
Chlorogenic acid butyl ester	Phenylpropanoid	Leaf	Belgium	00.0005%	M31529
Citric acid, 2-o-caffeoyl-(+)-allo-hydroxy:	Phenylpropanoid	Leaf	Belgium	00.0005%	M31529
Citronellol acetate	Monoterpene	Fruit	Nigeria	Not stated	M30164
Copaene, alpha:	Sesquiterpene	Fruit	Nigeria	Not stated	M30164
Cubebene, beta:	Sesquiterpene	Fruit essential oil	Mexico	02.3%	K13190
Cubenol	Sesquiterpene	Fruit essential oil	Mexico	traces	K13190
Curcumene, ar:	Sesquiterpene	Fruit essential oil	Mexico	00.4%	K13190
Cymene, P	Terpene	Fruit	Brazil	6.2%	SM2005
Cyclopentane, 1-2-3-trimethyl:	Alicyclic	Fruit	Nigeria	Not stated	M30164
Ethan-1-ol	Alkanol to C4	Fruit	Nigeria	Not stated	M30164
Ethyl acetate	Alkanol to C4	Fruit essential oil	Mexico	14.4%	K13190
Ethyl benzoate	Alkanol to C4	Fruit	Mexico	Not stated	SM2002
Ethyl butyrate	Alkanol to C4	Fruit essential oil Fruit Fruit	Mexico Mexico Brazil	14.4% Not stated 10.0%	K13190 SM2002 SM2005
Eugenol methyl ether	Phenylpropanoid	Fruit essential oil Fruit	Mexico Nigeria	00.2% Not stated	K13190 M30164

Compound	Chemical Type	Plant Part	Plant Origin	Quantity	Ref #
Farnesene,beta: cis:	Sesquiterpene	Fruit essential oil	Mexico	01.7%	K13190
Furfur-2-al	Oxygen Heterocycle	Fruit essential oil	Mexico	traces	K13190
Geraniin	Tannin	Leaf + Stem	Belgium	Not stated	H06852
Geraniin, galloyl:	Tannin	Leaf + Stem	Belgium	Not stated	H06852
Geraniol	Monoterpene	Fruit essential oil	Mexico	00.4%	K13190
Geraniol acetate	Monoterpene	Fruit	Nigeria	Not stated	M30164
Hexan-1-ol	Alkanol C5 or More	Fruit Fruit essential oil Fruit	Nigeria Mexico Mexico	Not stated 01.3% Not stated	M30164 K13190 SM2002
Hexanoate, ethyl	Lipid	Fruit Fruit	Mexico Brazil	Not stated 7.0%	SM2002 SM2005
Hexanoic acid ethyl ester	Lipid	Fruit essential oil	Mexico	08.8%	K13190
Hexanoic acid hexyl ester	Lipid	Fruit Fruit essential oil	Nigeria Mexico	Not stated traces	M30164 K13190
Hexanoic acid, 2-methyl-butyl:	Lipid	Fruit essential oil	Mexico	traces	K13190
Hexanoic acid, 3-hydroxy: ethyl ester	Lipid	Fruit	Nigeria	Not stated	M30164
Hex-cis-1-en-3-ol	Alkenol C5 or More	Fruit essential oil	Mexico	02.4%	K13190
Hex-cis-3-en-1-ol	Alkenol C5 or More	Fruit	Nigeria	Not stated	M30164
Hexyl acetate	Alkenol C5 or More	Fruit essential oil	Mexico	00.6%	K13190
Hexyl butyrate	Alkenol C5 or More	Fruit essential oil	Mexico	02.0%	K13190
Humulene, alpha:	Sesquiterpene	Fruit essential oil	Mexico	001.7%	K13190
Ketone, methyl-propyl:	Alkanone to C4	Fruit	Nigeria	Not stated	M30164
Limonene	Terpene	Fruit	Brazil	9/5%	SM2005

Compound	Chemical Type	Plant Part	Plant Origin	Quantity	Ref #
Linalool	Monoterpene	Fruit essential oil Fruit	Mexico Nigeria	006.1% Not stated	K13190 M30164
Linalool oxide	Monoterpene	Fruit	Nigeria	Not stated	M30164
Linalool, cis: oxide	Monoterpene	Fruit essential oil	Mexico	00.5%	K13190
Linalool, trans: oxide	Monoterpene	Fruit essential oil	Mexico	00.4%	K13190
Myrcene	Terpene	Fruit	Brazil	41.1%	SM2005
Nerol	Monoterpene	Fruit essential oil	Mexico	00.1%	K13190
Ocimene, beta: cis:	Monoterpene	Fruit essential oil	Mexico	00.2%	K13190
Ocimene, beta: trans:	Monoterpene	Fruit essential oil	Mexico	00.4%	K13190
Octa-cis-3-cis-5-diene, 2-2-7-7-tetramethyl:	Alkene C5 or More	Fruit	Nigeria	Not stated	M30164
Octan-1-ol	Alkanol C5 or More	Fruit essential oil	Mexico	traces	K13190
Octanoate, ethyl	Alkene C5 or More	Fruit	Mexico	Not stated	SM2002
Octanoic acid ethyl ester	Lipid	Fruit essential oil	Mexico	02.0%	K13190
Palmitic acid	Lipid	Fruit	Nigeria	Not stated	M30164
Pentan-1-al	Alkanal C5 or More	Fruit	Nigeria	Not stated	M30164
Pentan-2-ol, 2-methyl:	Alkanal C5 or More	Fruit	Nigeria	Not stated	M30164
Propan-1-al, 2-methyl:	Alkanal to C4	Fruit	Nigeria	Not stated	M30164
Propan-1-ol, 2-methyl:	Alkanal to C4	Fruit	Nigeria	Not stated	M30164
Salicylic acid methyl ester	Benzenoid	Fruit	Nigeria	Not stated	M30164
Salicylic acid, 6-(heneicos-cis-15'-enyl):	Benzenoid	Leaf + Stem	Belgium	Not stated	H14479
Salicylic acid, 6-(heptadeca-cis-8'-cis-11'-cis-14'-trienyl):	Benzenoid	Leaf + Stem	Belgium	Not stated	H14479
Salicylic acid, 6-(heptadeca-cis-8'-cis-11'-dienyl):	Benzenoid	Leaf + Stem	Belgium	Not stated	H14479
Salicylic acid, 6-(heptadec-cis-11'-enyl):	Benzenoid	Leaf + Stem	Belgium	Not stated	H14479

Compound	Chemical Type	Plant Part	Plant Origin	Quantity	Ref #
Salicylic acid, 6-(nonadec-cis-12'-enyl):	Benzenoid	Leaf + Stem	Belgium	Not stated	H14479
Selinene, beta:	Sesquiterpene	Fruit	Nigeria	Not stated	M30164
Selinene, gamma:	Sesquiterpene	Fruit	Nigeria	Not stated	M30164
Spondias Mombin Antibiotic	Unknown	Leaf + Stem	Not stated	Not stated	T09536
Spondias Mombin Gum	Carbohydrate	Stem	Venezuela	Not stated	K26107
Styrene	Benzenoid	Fruit essential oil	Mexico	00.2%	K13190
Terpinen-4-ol	Monoterpene	Fruit essential oil	Mexico	00.2%	K13190
Terpineol, alpha:	Monoterpene	Fruit essential oil Fruit	Mexico Nigeria	03.5% Not stated	K13190 M03164
Terpineol, delta:	Monoterpene	Fruit essential oil	Mexico	00.1%	K13190
Tetradecan-1-ol	Alkanol C5 or More	Fruit	Nigeria	Not stated	M30164

Biological Activities of Ubos (Spondias mombin)

Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Leaf - Nigeria	Toxicity Assessment	H2O ext	IP Mouse	LD50: 1.86 gm / kg	Active	Quantitative assessment	T16089
Leaf - Nigeria	Toxicity Assessment	H2O ext MEOH ext ETOH ext	PO Mouse PO Rat	5 g / kg	Inactive	No toxicity noted in any doses given to mice or rats orally.	SM2008
Leaf - Nigeria	Toxicity Assessment	H2O ext	IP Mouse IP Rat	200 mg /kg	Inactive	No toxicity noted.	SM2008
Leaf - Nigeria	Toxicity Assessment	H2O ext MEOH ext ETOH ext	IP Mouse	LD50: 1.36 g/kg LD50: 1.10 g/kg LD50: 0.48 g/kg	Active		SM2008
Leaf - Nigeria	Toxicity Assessment	H2O ext MEOH ext ETOH ext	IP Rat	LD50: 1.42 g/kg LD50: 1.08 g/kg LD50: 0.62 g/kg	Active		SM2008
Leaf - Nigeria	Uterine Stimulant Activity	H2O ext	Guinea pig	2-3 ml	Active	pregnant & non-pregnant uterus	T07675
Leaf - Nigeria	Uterine Stimulant Activity	H2O ext	Rat	37.5 mg / ml	Inactive	Uterus pregnant	T16089
Stembark - Brazil	Uterine Stimulant Activity	H2O ext	Rat	Not stated	Active	Strong activity	A03531
Leaf - Nigeria	Abortifacient Effect	H2O ext	GI Guinea pig	20 ml	Active	Aborted on the 5th day.	T07675
Leaf - Nigeria	Abortifacient Effect	H2O ext	IP Mouse	ED50: 750 mg / kg	Active		T16089
Leaf - Nigeria	Antioxytocic Effect	H2O ext	Mouse (pregnant)	37.5 mg / ml	Inactive	vs. oxytocin-induced contractions	T16089
Leaf - Nigeria	Antioxytocic Effect	H2O ext	Rat (pregnant)	37.5 mg / ml	Inactive	vs. oxytocin-induced contractions	T16089

GI = Gastric Intubation IG = Intragastric IP = Intraperitoneally IV = Intravenously SC = Subcutaneously PO = Orally

Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Leaf - Nigeria	Antioxytocic Effect	H2O ext	Rat (non pregnant)	37.5 mg / ml	Inactive	vs. oxytocin-induced contractions	T16089
Leaf - Nigeria	Antioxytocic Effect	H2O ext	Mouse (non pregnant)	37.5 mg / ml	Active	vs. oxytocin-induced contractions	T16089
Bark - Brazil	Cytotoxic Effect	MEOH ext	In vitro	Not stated	Active	Brine shrimp assay used to predict antitumor activity	ZZ1071
Leaf - Peru Bark - Peru Fruit - Peru	Cytotoxic Effect	ETOH ext	In vitro	2 drops / vial	Active	Brine shrimp assay used to predict antitumor activity. Leaf extract was most potent.	SM2010
Bark - Peru	Cytotoxic Effect	ETOH ext	Cell culture	9.1 ug /ml	Inactive	vs. colon and skin cancer cell lines	SM2011
Leaf - Nigeria	Smooth Muscle Relaxant	H2O ext	Guinea pig	2 ml	Active	vs. chemical-induced contractions	T07675
Leaf - Nigeria	Smooth Muscle Relaxant	H2O ext	Rabbit	1-2 ml	Active	vs. chemical-induced contractions	T07675
Leaf - Ivory Coast	Hemostatic Activity	Not stated	In vitro	50%	Active	Blood-human-whole	T15327
Bark - Venezuela	Anti-inflammatory Activity	ETOH ext	IG Rat	1.5 g / kg	Active	vs. carrageenan-induced pedal edema	L11991
Leaf+Twig - Panama	COX 1 Inhibition	MEOH ext	In vitro	Not stated	Active		L13394
Leaf - Nigeria	Sedative Activity	MEOH ext ETOH ext H20 ext	IP Mouse IP Rat	12-100 mg / kg 12-100 mg / kg 50 mg / kg	Active Active Active	Prolonged hexobarbital sleeping time and reduced rearing.	SM2003
Leaf - Nigeria	Anxiolytic Activity	MEOH ext ETOH ext H20 ext	IP Mouse IP Rat	12-100 mg/kg	Active	The methanol and ethanol extracts at 50 and 100 mg dosages were more potent as an anxiolytic than diazepam.	SM2008

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Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Leaf - Nigeria	Anticonvulsant Activity	MEOH ext ETOH ext H20 ext Phenolic fraction	IP Mouse IP Rat	12-100 mg / kg 12-100 mg / kg 50 mg / kg 50 mg / kg	Active	Blocked picrotoxin-induced convulsions.	SM2003
Leaf - Nigeria	Antidopaminergic Activity	MEOH ext ETOH ext H20 ext Phenolic ext	IP Mouse IP Rat	12-100 mg / kg 12-100 mg / kg 50 mg / kg	Active	Decreased amphetamine- and apomorphine-induced sterotyped behavior.	SM2003
Fruit - Nigeria	Anticonvulsant Activity	ETOH ext	IP Mouse	Various	Inactive	vs. chemical induced convulsions.	T06510
Leaf - Nigeria	Anthelmintic Activity	ETOH ext H2O ext	PO sheep	500 mg / kg	Active	After 2 doses fecal egg reductions were 15% for *Haenomonchus*, 27.5% for *Trichostrongylus*, 65% for *Oesophagostomum*, 54% for *Strongyloides*, and 100% for *Tichuris*.	SM2004
Leaf - Nigeria	Anthelmintic Activity	ETOH ext H2O ext	In vitro	LC50: 0.456 mg/ml LC50: 0.907 mg/ml	Active	vs. ovine gastrointestinal nematodes.	SM2004
Leaf - Nigeria	Antispasmodic Activity	Butanol Ext	Not stated	140 mcg / ml	Active	Uterus (unspecified)	L28236
Leaf - Nigeria	Smooth Muscle Stimulant	H2O ext	Guinea pig	10 ml	Inactive	Ileum	T07675
Leaf - Nigeria	Smooth Muscle Stimulant	H2O ext	Guinea pig	25.8 mg / ml 187.5 mg /ml	Inactive Active (weak)	Ileum	T16089
Fruit - Peru	Wound Healing Acceleration Activity	Hexane ext	Mouse external	100 mg / animal	Active		L12623
Latex - Peru	Capillary Permeability Increase	Pure latex	IP Rat	2.5 mg / animal	Active		L12623
Leaf - Peru	Antioxidant Activity	ETOH ext	TLC plate	Not stated	Active		SM2009

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Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Leaf+Twig - Panama	Antioxidant Activity	MEOH ext	In vitro	IC50 7.14 mcg/ml	Active		L13394
Leaf+Twig - Panama	Carcinogenisis Inhibition	MEOH ext	Cell culture	Not stated	Active	vs. DMBA-induced breast cancer	L13394
Bark - Nigeria	Carcinogenisis Inhibition	Not stated	PO Rat	Not stated	Active	Lowered rates of tumor incidence over control in rats fed a carcinogenic diet.	SM2007
Leaf+Stem - Ghana	Beta-Lactamase Inhibition	Hexane ext	In vitro	Not stated	Active		H14218
Bark - Peru	Antibacterial Activity	ETOH ext	Agar plate	20 uL / plate	Active	*Pseudomonas aeruginosa* *Bacillus cereus*	SM2010
Leaf - Peru	Antibacterial Activity	ETOH ext	Agar plate	20 uL / plate	Active Active	*Pseudomonas aeruginosa* *Bacillus cereus*	SM2009
Leaf - Peru	Antibacterial Activity	ETOH ext	Agar plate	20 uL / plate	Strong Activity	*Pseudomonas aeruginosa* *Bacillus cereus*	SM2010
Leaf - Nigeria	Antibacterial Activity	ETOH ext	Agar plate	10% 10% 5% 10% 5% 5%	Active Active Active Active Active Active	*Streptococcus sabrinus* *Pseudomonas aeruginosa* *Staphylococcus aureus* *Escherichia coli* *Shigella dysenteriae* *Salmonella typhosa*	T11002
Leaf - Nigeria	Antibacterial Activity	Fraction Alkaloids	Agar plate	100 mg / ml	Active	*Pseudomonas aeruginosa* *Shigella dysenteriae* *Salmonella typhosa* *Escherichia coli* *Klebsiella pneumoniae* *Proteus mirabilis* *Staphylococcus aureus* *Bacillus megaterium* *Bacillus subtilis*	L07104

GI = Gastric Intubation IG = Intragastric IP = Intraperitoneally IV = Intravenously SC = Subcutaneously PO = Orally

Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Leaf - Guatemala	Antibacterial Activity	ETOH-H20 ext	Agar plate	50 mcg / plate	Inactive	*Neisseria gonorrhea*	K27236
Leaf+Root - Guatemala	Antibacterial Activity	ETOH-H20 ext	Agar plate	50 mcg / plate	Active	*Neisseria gonorrhea*	K27236
Stembark - Nigeria	Antibacterial Activity	Fraction Alkaloids	Agar plate	100 mg / ml	Active Active Active Active Inactive Active Active Inactive Active	*Pseudomonas aeruginosa* *Shigella dysenteriae* *Salmonella typhosa* *Escherichia coli* *Klebsiella pneumoniae* *Proteus mirabilis* *Staphylococcus aureus* *Bacillus megaterium* *Bacillus subtilis*	L07104
Bark - Peru	Antibacterial Activity	ETOH ext	Agar plate	20 uL / plate	Active Active Inactive Inactive Inactive	*Bacillus cereus* *Pseudomonas aeruginosa* *Staphylococcus aureus* *Escherichia coli* *Heliocobacter pylori*	SM2011
Leaf+Twig - Panama	Reverse Transcriptase Inhibition	MEOH ext	In vitro	Not stated	Active	Virus-HIV-1	L13394
Leaf+Twig - Panama	Reverse Transcriptase Inhibition	Tannin-free ext	In vitro	IC50 > 68 mcg/ml	Inactive	Virus-HIV-1	L13394
Stembark Panama	Reverse Transcriptase Inhibition	Tannin-free ext	In vitro	IC50 > 82 mcg/ml	Inactive	Virus-HIV-1	L13394
Stembark Panama	Reverse Transcriptase Inhibition	MEOH ext	In vitro	Not stated	Active	Virus-HIV-1	L13394
Leaf+Stem - Belgium	Antiviral Activity	ETOH ext	Cell culture	Not stated	Active	*Herpes simplex - 1* *Coxsackie B2* *Poliovirus 1*	T09536

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Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Leaf+Stem - Belgium	Antiviral Activity	ETOH ext	Cell culture	Not stated	Active	*Herpes simplex - 1* *Coxsackie B2* *Poliovirus 1*	T13607
Leaf - Belgium	Antiviral Activity	ETOH ext	Cell culture	100 mcg / ml	Active	*Herpes simplex - 1*	M31529
Leaf+Stem - Belgium	Antiviral Activity	Fraction ext	Cell culture	Not stated	Active	*Herpes simplex - 1*	T09536
Leaf - Brazil	Antiviral Activity	ETOH ext	Cell culture	160 mcg / ml	Active	Inhibited human rotovirus by 97% and simian rotovirus by 96.2%	SM2006
Bark - Brazil	Antiviral Activity	ETOH ext	Cell culture	40 mcg / ml	Active	Inhibited human rotovirus by 82.2%.	SM2006
Leaf - Nigeria	Antifungal Activity	Fraction Alkaloids	Agar plate	100 mg / ml	Active	*Microsporum* species	L07104
Leaf - Nigeria	Antifungal Activity	Fraction Alkaloids	Agar plate	100 mg / ml	Inactive	*Aspergillus niger* *Penicillium* species	L07104
Stembark - Nigeria	Antifungal Activity	Fraction Alkaloids	Agar plate	100 mg / ml	Inactive Inactive Active	*Aspergillus niger* *Penicillium* species *Microsporum* species	L07104
Stembark - Nigeria	Antifungal Activity	Pet ether ext	Agar plate	50 mg / ml	Active Active Active	*Aspergillus niger* *Penicillium* species *Microsporum* species	L07104
Stembark - Nigeria	Antifungal Activity	CHCL3 ext	Agar plate	50 mg / ml	Active Active Active	*Aspergillus niger* *Penicillium* species *Microsporum* species	L07104
Bark - Peru	Antifungal Activity	ETOH ext	Agar plate	20 uL / plate	Active Active Active	*Saccharomyces cerevisiae* *Epidermophyton floccosum* *Trichophyton mentagrophytes*	SM2011
Leaf - Peru	Antiyeast Activity	ETOH ext	Agar plate	20 uL / plate	Active	*Candida albicans*	SM2009

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Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Leaf - Peru	Antiyeast Activity	ETOH ext	Agar plate	20 uL / plate	Strong Activity	*Candida albicans*	SM2010
Bark - Peru	Antiyeast Activity	ETOH ext	Agar plate	20 uL / plate	Strong Activity	*Candida albicans*	SM2010
Bark - Peru	Antiyeast Activity	ETOH ext	Agar plate	20 uL / plate	Active	*Candida albicans*	SM2011
Stembark - Nigeria	Antiyeast Activity	Pet ether ext CHCL3 extract	Agar plate	50 mg / ml 50 mg / ml	Active	*Candida albicans*	L07104
Stembark - Nigeria	Antiyeast Activity	Fraction Alkaloids	Agar plate	100 mg / ml	Active	*Candida albicans*	L07104
Leaf - Nigeria	Antiyeast Activity	Fraction Alkaloids	Agar plate	100 mg / ml	Active	*Candida albicans*	L07104
Leaf - Guatemala	Antiyeast Activity	ETOH ext	Agar plate	Not stated	Inactive	*Candida albicans*	M31296
Trunk bark - Brazil	Molluscicidal Activity	ETOH ext H2O ext	In vitro	1000 ppm	Active (weak)	*Biomphalaria glabrata* *Biomphalaria straminea*	W02949

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Literature Cited - Ubos (Spondias mombin)

A00708	PLANTES MEDICINALES DE GUINEE. CONAKRY, REPUBLIQUE DE GUINEE. VASILEVA,B: BOOK (1969) MOSCOW UNIV MOSCOW RUSSIA
A00709	FLORA MEDICINAL DE COLOMBIA. VOL.2/3 UNIVERSIDAD NACIONAL, BOGOTA. GARCIA-BARRIGA,H: BOOK (1975) UNIV NACL COLOMBIA SEC BOTANICA INST DE CIENC NAT BOGOTA COLOMBIA
A03531	PHARMACOLOGICAL SCREENING OF SOME BRAZILIAN PLANTS BARROS,GSG: MATOS,FJA: VIEIRA,JEV: SOUSA,MP: MEDEIROS,MC: J PHARM PHARMACOL (1970) 22 PP. 116 UNIV FED DO CEARA SCH PHARM FORTALEZA BRAZIL
A04079	USEFUL AND POISONOUS INDIGENOUS PLANTS OF SPANISH GUINEA. NAVA,JN: FARMACOGNOSIA (1951) 11 PP. 183 * BIOLOGICAL ABSTRACTS 26 26015
A04240	PHYTOTHERAPY IN GHANA. AMPOFO,O: UNPUBLISHED MANUSCRIPT FROM A.WEHRLI,WHO-GENEVA (1975) CENT SCI RES PLANT MED MAMPONG/AKWAPIM GHANA
H06852	ANTIVIRAL ELLAGITANNINS FROM SPONDIAS MOMBIN. CORTHOUT,J: PIETERS,LA: CLAEYS,M: VANDEN BERGHE,DA: VLIETINCK,AJ: PHYTOCHEMISTRY (1991) 30 (4) PP. 1129-1130 UNIV ANTWERP DEPT PHARM SCI ANTWERP B-2610 BELGIUM
H14218	SB-202742, A NOVEL BETA-LACTAMASE INHIBITOR ISOLATED FROM SPONDIAS MOMBIN. COATES,NJ: GILPIN,ML: GWYNN,MN: LEWIS,DE: MILNER,PH: SPEAR,SR: TYLER,JW: J NAT PROD (1994) 57 (5) PP. 654-657 CHEMOTHERAPEUT RES CENT SMITHKLINE BEECHAM PHARM BETCHWORTH RH3 7AL ENGLAND
H14479	ANTIBACTERIAL AND MOLLUSCICIDAL PHENOLIC ACIDS FROM SPONDIAS MOMBIN. CORTHOUT,J: PIETERS,L: CLAEYS,M: GEERTS,ST: VANDEN BERGHE,D: VLIETINCK,A: PLANTA MED (1994) 60 (5) PP. 460-463 UNIV ANTWERP DEPT PHARM SCI ANTWERP B-2610 BELGIUM
K13190	VOLATILES OF THE JOBO FRUIT (SPONDIAS MOMBIN L.). SAGRERO-NIEVES,L: DE POOTER,HL: J ESSENT OIL RES (1992) 4 (5) PP. 535-537 UNIV VERACRUZANA INST CIEN BAS VERACRUZ MEXICO
K26107	COMPARISON OF THREE ANACARDIACEAE GUM EXUDATES. DE PINTO,GL: MARTINEZ,M: MENDOZA,AJ: OCANDO,E: RIVAS,C: BIOCHEM SYST ECOL (1995) 23 (2) PP. 151-156 FAC HUMAIND EDUC CENTRO INVESTIG QUIM PROD NAT MARACAIBO VENEZUELA
K26363	THE USE OF MEDICINAL PLANTS BY THE YANOMAMI INDIANS OF BRAZIL. MILLIKEN,W: ALBERT,B: ECON BOT (1996) 50 (1) PP. 10-25 ROYAL BOTANIC GARDENS JODRELL LAB RICHMOND SURREY TW9 3DS ENGLAND
K26492	MEDICINAL PLANTS OF NICARAGUA'S ATLANTIC COAST. BARRETT,B: ECON BOT (1994) 48 (1) PP. 8-20 CHILD SURVIVAL FELLOW INCAP JOHNS HOPKINS UNIV HEALTH GUATEMALA GUATEMALA
K27038	PHYTOCHEMICAL SCREENING OF A WARAO PHARMACOPOEIA EMPLOYED TO TREAT GASTROINTESTINAL DISORDERS. WILBERT,W: HAIEK,G: J ETHNOPHARMACOL (1991) 34 (1) PP. 7-11 FUND LA SALLE CIENC NAT INST CARIB ANTROPOL SOCIOL CARACAS VENEZUELA

K27070	ETHNOBOTANY OF THE GARIFUNA OF EASTERN NICARAGUA. COEE,FG: ANDERSON,GJ: ECON BOT (1996) 50 (1) PP. 71-107 UNIV CONNECTICUT SCH PHARM STORRS CT 06268 USA
K27236	ANTIGONORRHOEAL ACTIVITY OF PLANTS USED IN GUATEMALA FOR THE TREATMENT OF SEXUALLY TRANSMITTED DISEASES. CACERES,A: MENENDEZ,H: MENDEZ,E: COHOBON,E: SAMAYAO,BE: JAUREGUI,E: PERALTA,E: CARRILLO,G: J ETHNOPHARMACOL (1995) 48 (2) PP. 85-88 UNIV SAN CARLOS FAC CHEM SCI PHARM GUATEMALA CITY GUATEMALA
L04137	AMAZONIAN ETHNOBOTANICAL DICTIONARY. DUKE, JAMES AND RUDOLFO VASQUEZ. BOCA RATON, FL: CRC PRESS INC., (1994)
L07104	ANTIMICROBIAL POTENTIAL OF SPONDIAS MOMBIN, CROTON ZAMBESICUS AND ZYGOTRITONIA CROCEA. ABO,KA: OGUNLEYE,VO: ASHIDI,JS: PHYTOTHER RES (1999) 13 (6) PP. 494-497 UNIV IBADAN DEPT PHARAMCOL COLL MED IBADAN NIGERIA
L11991	ANTIINFLAMMATORY ACTIVITY OF SOME MEDICINAL PLANT EXTRACTS FROM VENEZUELA. ABAD,MJ: BERMEJO,P: CARRETERO,E: MARTINEZ ACITORES,C: NOGUERA,B: VILLAR,A: J ETHNOPHARMACOL (1996) 55 PP. 63-68 UNIV COMPLUTENSE DEP PHARMACOL FAC PHARM MADRID SPAIN
L12623	EVALUATION OF THE WOUND-HEALING ACTIVITY OF SELECTED TRADITIONAL MEDICINAL PLANTS FROM PERU. VILLEGAS,LF: FERNANDEZ,ID: MALDONADO,H: TORRES,R: ZAVALETA,A: VAISBERG,AJ: HAMMOND,GB: J ETHNOPHARMACOL (1997) 55 PP. 193-200 UNIV PERUANA DEPT CIEN FISOLOG LAB FARMACOL LIMA 100 PERU
L13394	FOREST PLOT AS A TOOL TO DEMONSTRATE THE PHARMACEUTICAL POTENTIAL OF PLANTS IN A TROPICAL FOREST OF PANAMA. CALDERON,AI: ANGERHOFER,CK: PEZZUTO,JM: FARNSWORTH,NR: FOSTER,R: CONDIT,R: GUPTA,MP: SOEJARTO,DD: ECON BOT (2000) 54 (3) PP. 278-294 UNIV ILLINOIS AT CHICAGO PROGRAM COLLAB RES PHARM SCI COLL PHARMACY CHICAGO IL 60612 USA
L14706	ECONOMIC BOTANY OF SPONDIAS PURPUREA (ANACARDIACEAE) IN ECUADOR. MACIA,MJ: BARFOD,AS: ECON BOT (2000) 54 (4) PP. REAL JARDIN BOTANICO MADRID SPAIN
L15570	TRADITIONAL ANTI-MALARIAL MEDICINE IN RORAIMA, BRAZIL. MILLIKEN,W: ECON BOT (1997) 51 (3) PP. 212-237 CENTRE ECONOMIC BOTANY ROYAL BOTANIC GARDENS SURREY ENGLAND
L15725	MEDICINAL PLANTS USED FOR INTESTINAL DISEASES IN MBALMAYO REGION, CENTRAL PROVINCE, CAMEROON. NOUMI,E: YOMI,A: FITOTERAPIA (2001) 72 (3) PP. 246-254 UNIV YAOUNDE LAB BIOLOGIE ECOLE NORMALE YAOUNDE CAMEROON
L16047	SCREENING OF MEDICINAL PLANTS USED BY THE GARIFUNA OF EASTERN NICARAGUA FOR BIOACTIVE COMPOUNDS. COE,FG: ANDERSON,GJ: J ETHNOPHARMACOL (1996) 53 PP. 29-50 UNIV CONNECTICUT DEPT ECOL EVOLUNT BIOL STORRS CT 06269 USA
L17008	AN ETHNOBOTANICAL STUDY OF THE TRADITONAL MEDICINE OF THE MESTIZO PEOPLE OF SUNI MIRANO, LORETO, PERU. JOVEL,EM: CABANILLAS,J: TOWERS,GHN: J ETHNOPHARMACOL (1996) 1996 (53) PP. 149-156 UNIV BRITISH COLUMBIA DEPT BOTANY VANCOUVER V6T 1Z4 CANADA
L28236	SPASMOGENIC ACTIVITY OF BUTANOLIC LEAF EXTRACT OF SPONDIAS MOMBIN IN ISOLATED UTERINE MUSCLE OF THE RAT: ROLE OF CALCIUM. UCHENDU,CN: NWANKWO,IO: J NAT REMEDIES (2005) 5 (1) PP. 7-14 NSUKKA DEPT VET PHYSIOL PHARMACOL UNIV NIGERIA NIGERIA.

M09539	THE UNCONVENTIONAL SOURCES OF ASCORBIC ACID IN THE TROPICS. KESHINRO,OO: NUTR REP INT (1985) 31 (2) PP. 381-387 CHEMICAL ABSTRACTS 102 130659 G UNIV IBADAN COLL MED IBADAN NIGERIA
M30164	FREE AND GLYCOSIDICALLY BOUND AROMA COMPOUNDS IN HOG PLUM (SPONDIAS MOMBINS L.). ADEDEJI,J: HARTMAN,TG: ROSEN,RT: HO,CT: J AGR FOOD CHEM (1991) 39 (9) PP. 1494-1497 STATE UNIV NEW JERSEY DEPT FOOD SCI COOK COLL NEW BRUNSWICK NJ 08903 USA
M31296	PLANTS USED IN GUATEMALA FOR THE TREATMENT OF DERMATOMUCOSAL INFECTIONS. 1: SCREENING OF 38 PLANT EXTRACTS FOR ANTICANDIDAL ACTIVITY. CACERES,A: JAUREGUI,E: HERRERA,D: LOGEMANN,H: J ETHNOPHARMACOL (1991) 33 (3) PP. 277-283 UNIV SAN CARLOS FAC CHEM SCI PHARM GUATEMALA CITY GUATEMALA
M31529	ANTIVIRAL CAFFEOYL ESTERS FROM SPONDIAS MOMBIN. CORTHOUT,J: PIETERS,L: CLAEYS,M: VANDEN BERGHE,D: VLIETINCK,A: PHYTOCHEMISTRY (1992) 31 (6) PP. 1979-1981 UNIV ANTWERP DEPT PHARM SCI ANTWERP B-2610 BELGIUM
T00701	MEDICINAL PLANTS OF THE WEST INDIES. AYENSU,ES: UNPUBLISHED MANUSCRIPT (1978) PP. 110 SMITHSONIAN INSTITUTION OFFICE OF BIOLOGICAL CONSERVAT WASHINGTON DC 20560 USA
T06510	STUDIES ON SOME PLANTS USED AS ANTICONVULSANTS IN AMERINDIAN AND AFRICAN TRADITIONAL MEDICINE. ADESINA,SK: FITOTERAPIA (1982) 53 PP. 147-162 UNIV IFE DRUG RES UNIT FAC PHARM ILE-IFE NIGERIA
T07660	PHYTOTHERAPY IN DOMESTIC TRADITIONAL MEDICINE IN MATOUBA-PAPAYE(GUADELOUPE). VITALYOS,D: DISSERTATION- PH.D.-UNIV PARIS (1979) 1979 PP. 110PP-. UNIV PARIS PARIS FRANCE
T07675	PRELIMINARY PHARMACOLOGICAL STUDY OF SOME NIGERIAN MEDICINAL PLANTS. 1 AKUBUE,PI: MITTAL,GC: AGUWA,CN: J ETHNOPHARMACOL (1983) 8 (1) PP. 53-63 UNIV OF NIGERIA DEPT PHARMACOLOGY & TOXICOLOGY FAC PHARMACEUTICAL SCIENCES NSUKKA NIGERIA
T08806	TRADITIONAL PRACTICES AFFECTING THE HEALTH OF WOMEN AND CHILDREN IN AFRICA. KARGBO,TK: UNPUBLISHED MANUSCRIPT (1984) SOURCE WAS A SCIENTIFIC REVIEW PAPER.
T09536	ANTIVIRALLY ACTIVE SUBSTANCES FROM SPONDIAS MOMBIN L. (ANACARDIACEAE). CORTHOUT,J: TOTTE,J: CLAEYS,M: PIETERS,L: BERGHE,DV: VLIETINCK,AJ: ABSTR INTERNAT RES CONG NAT PROD COLL PHARM UNIV N CAROLINA CHAPEL HILL NC JULY 7-12 1985 (1985) PP. ABSTR-53 UNIV ANTWERP DEPT PHARM SCI WILRIJK B-2610 BELGIUM
T09679	MEDICINAL PLANTS IN PUJEHUN DISTRICT OF SIERRA LEONE. MACFOY,CA: SAMA,AM: J ETHNOPHARMACOL (1983) 8 (2) PP. 215-223 UNIV SIERRA LEONE BOTANY DEPT FOURAH BAY COLL FREETOWN SIERRA LEONE WEST AFRICA
T11002	ANTIBACTERIAL EFFECT OF AQUEOUS AND ALCOHOL EXTRACTS OF SPONDIAS MOMBIN, AND ALCHORNEA CORDIFOLIA - TWO LOCAL ANTIMICROBIAL REMEDIES. AJAO,AO: SHONUKAN,O: FEMI-ONADEKO,B: INT J CRUDE DRUG RES (1985) 23 (2) PP. 67-72 UNIV IFE DEPT MICROBIOL ILE IFE NIGERIA
T13607	ANTIVIRALLY ACTIVE CONSTITUENTS OF SPONDIAS MOMBIN L. CORTHOUT,J: PIETERS,L: CLAEYS,M: VANDEN BERHGE,D: VLIETINCK,AJ: PHARM WEEKBL(SCI ED) (1987) 9 (4) PP. 222-. UNIV ANTWERP DEPT PHARMACEUT SCI WILRIJK BELGIUM

T13846	POPULAR MEDICINE OF THE CENTRAL PLATEAU OF HAITI. 2. ETHNOPHARMACOLOGICAL INVENTORY. WENIGER,B: ROUZIER,M: DAGUILH,R: HENRYS,D: HENRYS,JH: ANTON,R: J ETHNOPHARMACOL (1986) 17 (1) PP. 13-30 LAB PHARMACOG FAC PHARM STRASBOURG 67048 FRANCE
T15323	VEGETALES EMPLEADOS EN MEDICINA TRADICIONAL NORPERUANA. RAMIREZ,VR: MOSTACERO,LJ: GARCIA,AE: MEJIA,CF: PELAEZ,PF: MEDINA,CD: MIRANDA,CH: BANCO AGRARIO DEL PERU & NACL UNIV TRUJILLO, TRUJILLO, PERU, JUNE, 1988 (1988) PP. 54 UNIV TRUJILLO TRUJILLO PERU
T15327	HEMOSTATIC ACTIVITY OF 216 PLANTS USED IN TRADITIONAL MEDICINE IN THE IVORY COAST. KONE-BAMBA,D: PELISSIER,Y: OZOUKOU,ZF: KOUAO,D: PLANT MED PHYTOTHER (1987) 21 (2) PP. 122-130 FAC PHARM ABIDJAN LAB PHARMACOG ABIDJAN IVORY COAST
T15375	A SURVEY OF PLANTS WITH ANTIFERTILITY PROPERTIES DESCRIBED IN THE SOUTH AMERICAN FOLK MEDICINE. GONZALEZ,F: SILVA,M: ABSTR PRINCESS CONGRESS I BANGKOK THAILAND 10-13 DECEMBER 1987 (1987) PP. 20PP-. UNIV CONCEPCION LAB QUIM PROD NAT CONCEPCION CHILE
T16089	ABORTIFACIENT ACTIVITY OF AN AQUEOUS EXTRACT OF SPONDIAS MOMBIN LEAVES. OFFIAH,VN: ANYANWU,II: J ETHNOPHARMACOL (1989) 26 (3) PP. 317-320 UNIV NIGERIA DEPT PHARM TOX FAC PHARM SCI NSUKKA NIGERIA
W00113	MEDICINAL PLANTS OF WEST AFRICA. REFERENCE PUBLICATIONS,INC. ALGONAC,MICHIGAN,U.S.A. AYENSU,ES: BOOK (1978) SMITHSONIAN INSTITUTION BOTANY DEPT WASHINGTON DC USA
W01267	THE ETHNOBOTANY OF THE ISLAND CARIBS OF DOMINICA. HODGE,WH: TAYLOR,D: WEBBIA (1956) 12 PP. 513-644 LONGWOOD GARDENS PHILADELPHIA PA USA
W01316	MEDICINAL PLANTS OF JAMAICA. III. ASPREY,GF: THORNTON,P: WEST INDIAN MED J (1955) 4 PP. 69-82 UNIV PENNSYLVANIA PHILADELPHIA PA USA
W02949	MOLLUSCICIDAL ACTIVITY OF PLANTS FROM NORTHEAST BRAZIL. PINHEIRO DE SOUSA,M: ROUQUAYROL,MZ: REV BRASIL PESQ MED BIOL (1974) 7 (4) PP. 389-394 UNIV FED CEARA DEPT FARMACOL EXP CENT CIENC SAUDE CEARA BRAZIL
W04467	AN ETHNOBOTANICAL COMPARISON OF FOUR TRIBES OF AMAZONIAN INDIANS. PRANCE,GT: ACTA AMAZONICA (1972) 2 (2) PP. 7-27 NEW YORK BOTANICAL GARDEN BRONX NY USA
SM2001	YELLOW MOMBIN. P. 245-248. IN: FRUITS OF WARM CLIMATES. JULIA F. MORTON. BOOK (1987) MIAMI. FL
SM2002	A NEW POTENTIAL ATTRACTANT FOR ANASTREPHA OBLIQUA FROM SPONDIAS MOMBIN FRUITS. CRUZ-LOPEZ L, MALO EA, TOLEDO J, VIRGEN A, DEL MAZO A, ROJAS JC. J CHEM ECOL. 2006 FEB;32(2):351-65.
SM2003	SEDATIVE, ANTIEPILEPTIC AND ANTIPSYCHOTIC EFFECTS OF SPONDIAS MOMBIN L. (ANACARDIACEAE) IN MICE AND RATS. AYOKA AO, AKOMOLAFE RO, IWALEWA EO, AKANMU MA, UKPONMWAN OE. J ETHNOPHARMACOL. 2006 JAN 16;103(2):166-75.
SM2004	ANTHELMINTIC ACTIVITY OF EXTRACTS OF SPONDIAS MOMBIN AGAINST GASTROINTESTINAL NEMATODES OF SHEEP: STUDIES IN VITRO AND IN VIVO. ADEMOLA IO, FAGBEMI BO, IDOWU SO. TROP ANIM HEALTH PROD. 2005 APR;37(3):223-35.

SM2005	ANALYSIS OF VOLATILE COMPOUNDS OF TAPEREBA (SPONDIAS MOMBIN L.) AND CAJA (SPONDIAS MOMBIN L.) BY SIMULTANEOUS DISTILLATION AND EXTRACTION (SDE) AND SOLID PHASE MICROEXTRACTION (SPME). CEVA-ANTUNES PM, BIZZO HR, ALVES SM, ANTUNES OA. J AGRIC FOOD CHEM. 2003 FEB 26;51(5):1387-92.
SM2006	IN VITRO ANTI-ROTAVIRUS ACTIVITY OF SOME MEDICINAL PLANTS USED IN BRAZIL AGAINST DIARRHEA. GONCALVES JL, LOPES RC, OLIVEIRA DB, COSTA SS, MIRANDA MM, ROMANOS MT, SANTOS NS, WIGG MD. J ETHNOPHARMACOL. 2005 JUL 14;99(3):403-7. DEPARTAMENTO DE VIROLOGIA, INSTITUTO DE MICROBIOLOGIA. UNIVERSIDADE FEDERAL DO RIO DE JANEIRO CENTRO DE CIENCIAS DA SAUDE (CCS), BLOCOI, RIO DE JANEIRO, BRAZIL.
SM2007	STUDIES ON THE NUTRITIONAL VALUE AND ANTI-TUMOUR PROPERTY OF THE BARK OF SPONDIAS MOMBIN L. M. IDU, JE. ATAMAN, AO. AKHIGBE, OG. UCHO, S.F AKINBO; JOURNAL OF MEDICINE AND BIOMEDICAL RESEARCH VOL. 1, NO. 2 (2002). UNIVERSITY OF BENIN, PMB 1154, BENIN CITY, NIGERIA.
SM2008	STUDIES ON THE ANXIOLYTIC EFFECT OF SPONDIAS MOMBIN L. (ANACARDIACEAE) EXTRACTS. A. O. AYOKA, R. O. AKOMOLAFE, E. O. IWALEWA, O. E. UKPONMWAN; AFR. J. TRAD. CAM (2005) 2 (2): 153 - 165. DEPARTMENT OF PHYSIOLOGICAL SCIENCES, COLLEGE OF HEALTH SCIENCES AND DEPARTMENT OF PHARMACOLOGY, FACULTY OF PHARMACY, OBAFEMI AWOLOWO UNIVERSITY, ILE IFE, OSUN STATE.
SM2009	ETHNOBOTANY AND BIOLOGICAL ACTIVITY OF PLANTS UTILIZED DURING PREGNANCY AND CHILDBIRTH IN THE PERUVIAN AMAZON A. KRAMER, E. MOSQUERA, J. RUIZ, E. RODRIGUEZ. EMANATIONS FROM THE RAINFOREST AND THE CARRIBEAN VOL. 4 SEPTEMBER 2002, CORNELL UNIVERSITY ITHACA, NY 14853
SM2010	PHYTOCHEMICAL ANALYSIS OF CEDRELA ODORATA AND SPONDIAS MOMBIN, TWO DIETARY SOURCES OF CALLITHRIX PYGMEA ON THE YARAPA RIVER IN THE AMAZON BASIN OF PERU K. FLOOD, E. RODRIGUEZ, J. C. PALOMINO, AND C. SANDOVAL. EMANATIONS FROM THE RAINFOREST AND THE CARRIBEAN VOL. 4 SEPTEMBER 2002, CORNELL UNIVERSITY ITHACA, NY 14853
SM2011	ANTI-FUNGAL PLANTS OF THE PERUVIAN AMAZON: A SURVEY OF ETHNOMEDICAL USES AND BIOLOGICAL ACTIVITY A. HERFORTH, J. RUIZ, E. MOSQUERA, M. LAUX, E. RODRIGUEZ. EMANATIONS FROM THE RAINFOREST AND THE CARRIBEAN VOL. 4 SEPTEMBER 2002, CORNELL UNIVERSITY ITHACA, NY 14853
SM2012	INSECTS ASSOCIATED WITH SOME MEDICINAL PLANTS IN SOUTH-WESTERN NIGERIA. BANJO,AD; LAWAL,OA; AINA,SA; W J ZOOLOGY VOLUME 1 NUMBER (1): 40-53, JAN-JUNE, 2006. DEPARTMENT OF PLANT SCIENCE AND APPLIED ZOOLOGY, OLBISI ONABANJU UNIVERSITY OGUN STATE, NIGERIA
ZZ1002	PLANTAS MEDICINAIS BRASILEIRAS, CONHECIMENTOS POPULARES E CIENTIFICOS. DE ALMEIDA, E.R.; HEMUS EDITORA LTDA.: SAU PAULO, BRAZIL. (1993)
ZZ1005	THE HEALING FOREST: MEDICINAL AND TOXIC PLANTS OF THE NORTHWEST AMAZONIA. SCHULTES, R. E. AND RAFFAUF. PORTLAND: R.F. DIOSCORIDES PRESS. (1990)
ZZ1008	PLANTAS MEDICINALES DE USO POPULAR EN LA AMAZONIA PERUANA; KEMBER MEIJA & ELAS RENG; TAREA ASOCIACION GRAFICA EDUCATIVE; LIMA PERU.

ZZ1013	DICIONARIO DAS PLANTAS UTEIS DO BRAZIL, 5TH ED. CRUZ, G.L. RIO DE JANEIRO: BERTRAND (1995)
ZZ1019	RAINFOREST REMEDIES, ONE HUNDRED HEALING HERBS OF BELIZE. ARVIGO, ROSITA AND MICHAEL BALICK;. TWIN LAKES, WI: LOTUS PRESS, INC. (1993)
ZZ1022	THE ETHNOBOTANY DATABASE. BECKSTROM-STERNBERG, STEPHEN M: DUKE, JAMES A: WAIN, K.K: (ACEDB VERSION 4.3-DATA VERSION JULY 1994). NATIONAL GERMPLASM RESOURCES LABORATORY (NGRL), AGRICULTURAL RESEARCH SERVICE (ARS), U.S. DEPARTMENT OF AGRICULTURE.
ZZ1033	PHARMACOPÉES TRADITIONELLES EN GUYANE: CRÉOLES, PALIKUR, WAYPI.; GRENAND, P., C. MORETTI, AND H. JACQUEMIN. EDITORIAL L-ORSTROM, COLL. MEM NO. 108. PARIS, FRANCE, (1987).
ZZ1039	TALES OF A SHAMAN'S APPRENTICE. PLOTKIN, MARK, J. MIDDLESEX, ENGLAND: PENGUIN BOOKS, (1993)
ZZ1045	USEFUL PLANTS OF AMAZONIAN PERU. VASQUEZ, MR: SECOND DRAFT. FILED USDA'S NATIONAL AGRICULTURAL LIBRARY (1990)
ZZ1047	"THE PHYTOCHEMICAL DATABASE." (ACEDB VERSION 4.3—DATA VERSION JULY 1994). BECKSTROM-STERNBERG, STEPHEN M., AND JAMES A. DUKE. NATIONAL GERMPLASM RESOURCES LABORATORY (NGRL), AGRICULTURAL RESEARCH SERVICE (ARS), U.S. DEPARTMENT OF AGRICULTURE.
ZZ1071	SCREENING OF PLANTS FOUND IN AMAZONAS STATE FOR LETHALITY TOWARDS BRINE SHRIMP; QUIGNARD, E.L.J., ET AL. ACTA AMAZONICA 33(1): 93-104. (2003)
ZZ1072	PLANTAS QUE AJUDAM O HOMEN. GUIA PRACTICO PARA A EPOCA ATUAL; JOSE CARIBE AND JOSE MARIA CAMPOS; CULTRIX/PESAMENTO, SAO PAULO, BRAZIL. (1991)
ZZ1078	FARMACIA VIVAS; F. J. ABREU MATOS; EUFC; FORTALEZA, BRAZIL (1994)
ZZ1079	PLANTAS DE CURAM: CUDIE DA SUA SAUDE ATRAVES DE NATUREZA, 5TH ED. MOREIRA, FREDERICO. SAO PAULO, BRAZIL: HEMUS EDITORA LTDA (1996)
ZZ1082	TOWARDS A CARIBBEAN PHARMACOPOEIA. ROBINEAU, L., ED. ; ENDA CARIBE, SANTO DOMINGO: TRAMIL-4 WORKSHOP, UNAH, (1991).
ZZ1084	PLANTAS UTILES DEL AL AMAZONA PERUANA, CARACTERISTICAS, USOS, Y POSIBILIDADES;; RODOLFO BARRIGA RUIZ, CONCYTEC; LIMA PERU (1994)
ZZ1093	PERU-EL LIBRO DE LAS PLANTAS MAGICAS, 2ND ED. ZADRA, DE, ADRIANA ALARCO. LIMA: CONCYTEC (2000)
ZZ1098	USE OF NATIVE TREE SPECIES BY AN HISPANIC COMMUNITY IN PANAMA; SALOMO´ N AGUILAR AND RICHARD CONDIT; ECONOMIC BOTANY 55(2) PP. 223–235. 2001
ZZ1099	MEDICINAL PLANTS OF BRAZIL; WALTER MORS, CALOS RIZZINI, NUNO PEREIRA; REFERENCE PUBLICATIONS, INC.; ALGONAC, MI (2000)
ZZ1101	DICCIONARIO ENCICLOPEDICO DE PLANTAS UTILES DEL PERU. BRACK EGG, ANTONIO. CUZCO, PERU: CBC (1999)

ZZ1104	MEDICINAL PLANTS OF THE GUIANAS (GUYANA, SURINAM, FRENCH GUIANA) BY ROBERT A. DEFILIPPS, SHIRLEY L. MAINA AND JULIETTE CREPIN; ONLINE AT THE BIOLOGICAL BIODIVERSITY OF THE GUIANA SHIELD. SMITHSONIAN NATURAL MUSEUM OF NATURAL HISTORY 2006 HTTP://WWW.MNH.SI.EDU/BIODIVERSITY/BDG/MEDICINAL/
ZZ1105	PERU: INFORME NACIONAL PARA LA CONFERENCIA TECNICA INTERNACIONAL DE LA FAO SOBRE LOS RECURSOS FITOGENETICOS; SANTIAGO PASTOR SOPLIN, ET AL. LEIPZIG. LIMA PERU (1996)
ZZ1106	CRC ETHNOBOTANY DESK REFERENCE; TIMOTHY JOHNSON. CRC PRESS LLC., NY NY (1999)
ZZ2003	MEDICINA INDIGENA. LAS PLANTAS MEDICINALES Y SU BENEFICIO EN LA SALUD (SHIPIBO - CONIBO); GUILLERMO AREVALO VALERA; CENTRO ORIENTAMENTO EDUCATIVO; PULCALPA, PERU (1994)
ZZ2005	PLANTAS MEDICINAIS NO BRAZIL, NATIVAS E EXOTICAS; HARRI LORENZI AND FRANCISCO MATOS; INSTITUTO PLANTARUM DE ESTUDOS DA FLORA LTDA; SAO PAULO, BRAZIL (2002)
ZZ2007	SIXTY MEDICINAL PLANTS FROM THE PERUVIAN AMAZON: ECOLOGY, ETHNOMEDICINE AND BIOACTIVITY; CRISTIAN DESMARCHELIER AND FERNANDO WITTING SCHAUS; (NO PUBLISHER EBIO2000.NET); COPYRIGHT IN LIMA PERU. (2000)
ZZ2009	SALUD PARA TODOS. PLANTAS MEDICINALES Y SALUD INDIGENA EN LA CUENCA DEL RIO MADRE DE DIOS, PERU; DIDIER LACAZE AND MIQUEL ALEXIADES; FENAMAD; MADRE DE DIOS, PERU (1995)
ZZ2010	PRINCIPALES PLANTAS REPUTADAS COMO MEDICINALES EN LA AMAZONIA. BERG,ME., RAMALHO,ME., VASQUEZ,R. PRORAMMA DE MECICINA TRADICIONAL ORGANIZACIOL MUNDAIL DE LA SALUD (WHO/TRM/91.4) (1991)
ZZ2011	PLANTAS MEDICINALES DE LA AMAZONÍA PERUANA. ESTUDIO DE SU USO Y CULTIVO PINEDO P, MARIO; RENGIFO S., ELSA; CERRUTI S., TEODORO. DIC. IIAP, IQUITOS, PERU (1997)
ZZ2013	FITOMEDICINA, 1100 PLANTAS MEDICINALES; TEODORO AGAPITO F. & ISABEL SUNG; EDITORIAL ISABEL; LIMA. PERU (2003)
ZZ2027	NOTES ON SOME MEDICINAL AND POISONOUS PLANTS OF AMAZONIAN PERU. AYALA FLORE, F. (1984) ADVANCES IN ECONOMIC BOTANY 1: 1984: PP 1-8