Antimicrobial Guide

Rainforest Plants & Formulas with actions against Bacteria, Viruses Fungi, Candida Mycoplasmas & Parasites

AMAZON A–F CAPSULES

Description: A synergistic combination of rainforest botanicals traditionally used in South America for fungi, candida and mold. The plants in this formula have been independently tested with antifungal, anticandidal, and anti-mold plant activities and/or plant chemicals.
Traditional Uses: For fungal infections, candidiasis, mold contamination and yeast infections.
Ingredients: A herbal blend of jatoba (Hymenaea courbaril), pau d'arco (Tabebuia impetiginosa), anamu (Petiveria alliacea), clavillia (Mirabilis jalapa), Brazilian peppertree (Schinus molle), guaco (Mikania guaco), fedegoso (Cassia occidentalis), and graviola (Annona muricata).
Suggested Use: Take 2-3 capsules (650 mg each) twice daily on an empty stomach
Contraindications: Not to be used during pregnancy or while breast-feeding.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions:

- Anamu and guaco contain coumarin which has an anticoagulant effect. People with blood disorders should be monitored more closely for this possible effect.
- This formula is more effective if taken daily for a minimum of 30 days.
- Jatoba has a natural stimulant effect. Take last daily serving before 5 pm to avoid sleeplessness.
- Several plants in this formula have a depurative effect. Reports of increased bowel movements and waste elimination are common. Reports of increased intestinal gas and flatulence are less common, but sometimes occurs in a small percentage during the first 5-7 days.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

- Jatoba contains terpene and phenolic chemicals which are responsible for protecting the tree from fungi and mold in the rainforest. These antifungal terpenes and phenolics have been documented in several studies over the years and the antifungal activity of jatoba is attributed to these chemicals.
- Pau d'arco has antimicrobial phytochemicals which were demonstrated in several clinical studies to exhibit strong *in vitro* activity against bacteria, fungi, and yeast. A water extract of pau d'arco was reported (in other *in vitro* research) to have strong activity against 11 fungi and yeast strains.
- Anamu's antifungal properties were documented by one research group in 1991, and again by a separate research group in 2001. Its antimicrobial activity was further demonstrated by researchers from Guatemala and Austria who, in separate studies in 1998, confirmed its activity *in vitro* and *in vivo* studies against several strains of protozoa, bacteria, and fungi.
- Clavillia contains a group of amino acid-based proteins called mirabilis antiviral proteins (MAPs) which help protect the plant against various viruses and soil-borne fungi. In laboratory tests a hot water extract of clavillia demonstrated antifungal activity.
- Brazilian peppertree has displayed good-to-very strong *in vitro* antifungal actions against numerous fungi, as well as *Candida* in independent research. One research group indicated that the antifungal action of the essential oil was more effective than the antifungal drug Multifungin.® Research published in 2005 continues to document Brazilian peppertree's antifungal and anticandidal activities.
- Guaco contains a plant chemical called kaurenoic acid which has demonstrated antifungal and antibacterial activity. In research published in 2002, a guaco leaf extract was reported with *in vitro* antibacterial and antiyeast actions against *Candida*.
- Fedegoso has been documented in *in vitro* research with antibacterial, antifungal, antiparasitic, insecticidal, and antimalarial properties.
- Graviola (and various chemicals found in graviola) have been documented to be selectively cytotoxic to mutated cells with P-glycoprotein mediated pumps. These intercellular efflux pumps can be found in candida, cancer, fungi, and bacteria cells which make these pathogens multi-drug resistant.

AMAZON A–F TOPICAL

Description: A synergistic formula of powerful rainforest botanicals traditionally used in South America for yeast infections, fungi, ringworm, athlete's foot, nail fungus and other skin conditions of a fungal nature. The plants in this formula have been independently tested with antifungal or anticandidal plant chemicals and/or activities.
Traditional Uses: For fungal skin conditions, athlete's foot, nail fungus, and yeast infections.
Ingredients: A herbal blend of sangre de grado (Croton lechleri), copaiba (Copaifera officinalis), andiroba (Carapa guianensis), jatoba (Hymenaea courbaril), bellaco caspi (Himatanthus sucuuba), pau d'arco (Tabebuia impetiginosa), ubos (Spondias mombin), matico (Piper aduncum), mulateiro (Calyco-phyllum spruceanum), tamamuri (Brosimum actuifolium), Brazilian peppertree (Schinus molle), cumaseba (Swartzia polyphylla), and fedegoso (Cassia occidentalis) extracted in distilled water and 30% alcohol.
Suggested Use: For the skin or nails, shake well and apply directly to the affected area twice daily. Allow to dry completely before covering. As a douche: dilute 2 teaspoons in a cup of warm water and use once daily for three consecutive days.
Contraindications: None known.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions: In some systemic conditions, using the A–F capsules internally with the A–F Topical externally is warranted.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

- Sangre de grado was documented with antifungal properties by researchers in Canada.
- Copaiba contains the chemical caryophyllene which has demonstrated antifungal actions against nail fungus in laboratory research.
- Andiroba is an emollient rainforest nut oil used as a natural emulsifier and penetrating agent. It also has been documented with antimicrobial and insecticidal actions.
- Jatoba contains terpene and phenolic chemicals which have been documented as potent antifungals in several studies over the years.
- Bellaco caspi evidenced a greater antifungal effect than the antifungal drug, nistatin, in research conducted in Brazil in 1998.
- Pau d'arco was reported to have strong activity *in vitro* against 11 fungus and yeast strains.
- Ubos is traditionally used for candida and fungal infections and scientists have confirmed the plant's anticandidal and antifungal action in laboratory research.
- Matico has evidenced broad spectrum antimicrobial actions against numerous pathogens, including fungi and yeast..
- Mulateiro is widely used in the Amazon against skin fungi. This tree bark contains large amounts of phenols and organic acids which have demonstrated antifungal, antibacterial and insecticidal activity.
- Tamamuri was reported to possess antifungal and antiyeast action against *Candida* and *Saccharomyces* in research published in 2002.
- Brazilian peppertree has displayed good-to-very strong *in vitro* antifungal actions against numerous fungi, as well as *Candida* in independent research. In one study, it was reported to be more effective than the antifungal drug Multifungin.® Research published in 2005 continues to document Brazilian peppertree's antifungal and anticandidal activities.
- Cumaseba has been confirmed through *in vitro* testing to possess antifungal and anticandidal actions.
- In *in vitro* research over the years fedegoso has been documented with antifungal, antibacterial, anti-parasitic, insecticidal, and antimalarial properties.

AMAZON A–P CAPSULES

Description: A synergistic formula of rainforest plants traditionally used in South America for parasites. The plants in this formula have been independently tested with antiparasitic plant chemicals and/or anti-parasitic, antiamebic, antiprotozoal, and/or antimalarial activities.
Traditional Uses: For parasitic and amebic infections, malaria, trypanosomiasis, and schistosomiasis.
Ingredients: A herbal blend of amargo (Quassia amara), simarouba (Simarouba amara), boldo (Peumus boldus), fedegoso (Cassia occidentalis), carqueja (Baccharis genistelloides), quinine (Cinchona succirubra), erva tostão (Boerhaavia diffusa), epazote (Chenopodium ambrosioides), anamu (Petiveria alliacea), and graviola (Annona muricata).
Suggested Use: Take 2-3 capsules (650 mg each) twice daily with meals (depending on body weight).
Contraindications: Not to be used during pregnancy or while breast feeding.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions:

- Several plants in this formula have been documented with hypotensive properties. Individuals with low blood pressure should be monitored more closely for this possible effect.
- This formula is more effective if taken consecutively for a minimum of 40 days.
- Do not exceed 9 capsules daily. Exceeding recommended amount may cause stomach cramps.
- A prophylactic dosage of 2 capsules twice daily can be used when traveling to malaria-prone or parasitically-infested areas. Leslie Taylor uses this product for this purpose during her trips into the Amazon.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

- Amargo and various chemicals in amargo have demonstrated antiparasitic, antiamebic, antimalarial, and insecticidal actions in laboratory studies.
- Simarouba contains quassinoid chemicals (including ailanthinone, glaucarubinone, and holacanthone) which have been scientifically documented with antiprotozoal, antiamebic, and antimalarial actions.
- Boldo leaves contain a phytochemical called asaridole which has been documented to possess anti-parasitic, antimalarial, and vermifuge properties.
- Fedegoso has been used for many types of parasitic infections in the tropical countries where it grows. Research on fedegoso leaves over the years has reported active antiparasitic, insecticidal, and anti-malarial properties.
- Carqueja contains several novel clerodane diterpenoids which scientists have documented with potent vermifuge and anthelmintic actions.
- Quinine has long been documented with antiprotozoal, antispasmodic, antimalarial, antipyretic, and antiparasitic actions in laboratory studies. Recent reports indicate that crude extracts of quinine bark are effective against drug-resistant malarial strains.
- Erva tostão has been reported to possess antiamebic actions *in vivo* and *in vitro*.
- Epazote leaf extract was given to 72 children and adults with intestinal parasitic infections in a clinical study. On average, an antiparasitic efficacy was seen in 56% of cases. With respect to the tested parasites, epazote leaf extract was reported to be 100% effective against the common intestinal parasites, *Ancilostoma* and *Trichuris*, and, 50% effective against *Ascaris*. In 2001, thirty children with intestinal roundworms were treated with epazote. Disappearance of the *Ascaris* eggs occurred in 86.7%, while the parasitic burden decreased in 59.5%. In addition, this study also reported that epazote was 100% effective in eliminating *Hymenolepsis nana* (common human tapeworm).
- Anamu has been documented with antitrypanosomal and antiprotozoal activity in laboratory studies. Graviola contains chemicals called Annonaceous acetogenins which have been documented and patented as antiparasitic and insecticidal agents.

AMAZON A–V CAPSULES

Description: A synergistic formula of rainforest botanicals traditionally used in South America for viruses. The plants in this formula have been independently tested with antiviral plant chemicals and/or activities.
Traditional Uses: The plants in this formula have traditionally been used for viruses.
Ingredients: A herbal blend of bitter melon (Momordica charantia), clavillia (Mirabilis jalapa), mullaca (Physalis angulata), jergon sacha (Dracontium loretense), carqueja (Baccharis genistelloides), amargo (Quassia amara), chanca piedra (Phyllanthus niruri), mutamba (Guazuma ulmifolia) and anamu (Petiveria alliacea).
Suggested Use: Take 3 capsules (650 mg each) three times daily.
Contraindications: Not to be used during pregnancy or while breast-feeding.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions:

- Several ingredients in this formula have demonstrated significant *in vitro* antimicrobial properties. Supplementing the diet with probiotics and digestive enzymes is advisable if this product is used for longer than 15 days.
- Drinking plenty of water (at least 8 glasses a day) is helpful to reduce Herxheimer reactions.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

- Bitter melon (and several of its plant chemicals) have been documented with *in vitro* antiviral activity against numerous viruses, including Epstein-Barr, herpes, and HIV viruses. In an *in vivo* study, a leaf extract increased resistance to viral infections and had an immunostimulant effect in humans and animals.
- Clavillia contains a group of amino acid-based proteins, called mirabilis antiviral proteins (MAPs). These chemicals have demonstrated antiviral actions in numerous tests and have been patented as antiviral agents.
- Mullaca has been demonstrated in laboratory tests to possess reverse transcriptase inhibitory effects. Other research reports antiviral actions against polio virus I, herpes simplex virus I, the measles virus, and HIV-1.
- Jergon sacha is employed for viral conditions in Peru. Dr. Roberto Inchuastegui Gonzales, president of the Committee of AIDS and Transmissible Diseases at the Peruvian Institute of Social Security in Iquitos, Peru reports using it for HIV and other viruses.
- Carqueja showed *in vitro* antiviral actions against *Herpes simplex* I and *Vesicular stomatitis* viruses at low dosages in laboratory research. Researchers in Texas published that a water extract of carqueja provided an *in vitro* inhibition of HIV virus replication in T-cells. In subsequent research, they've attributed this anti-HIV effect to a single chemical they found in the water extract of carqueja called 3,5-dicaffeoyl-quinic acid and reported that this plant chemical is a potent inhibitor of HIV at dosages as low as only 1 mcg/ml.
- Amargo was reported to have antiviral activity when scientists at Texas Christian University demonstrated in 1996 that a water extract was active *in vitro* against cells infected with HIV.
- Chanca piedra has been the subject of much study with Hepatitis B. A review of 22 randomized trials by The Cochrane Hepato-Biliary Research Group suggests it has, “a positive effect on clearance of serum HBsAg (Hepatitis B surface antigen) comparable to interferon and was better than nonspecific treatment or other herbal medicines for HBV and liver enzyme normalization." Several other studies indicated chanca piedra has antiviral actions against HIV-1.
- Mutamba was reported with antiviral activity against *Herpes simplex* type 1 in a 1995 study.
- Anamu inhibited the replication of the bovine diarrhea virus (a test model used for hepatitis C virus) in research published in 2002.

AMAZON A–V TOPICAL

Description: A synergistic formula of rainforest botanicals traditionally used in South America for viruses on the skin. The plants in this formula have been independently tested with antiviral plant chemicals and/or activities.
Traditional Uses: For cold sores, warts, and herpes ulcers.
Ingredients: A herbal blend of sangre de grado (Croton lechleri), copaiba (Copaifera officinalis), bitter melon (Momordica charantia), clavillia (Mirabilis jalapa), huacapu (Minquartia guianensis), mullaca (Physalis angulata), macela (Achyrocline satureoides), ubos (Spondias mombin), pau d'arco (Tabebuia impetiginosa), culen (Otholobium glandulosum), and vassourinha (Scoparia dulcis) extracted in distilled water and alcohol.
Suggested Use: Apply externally to the affected area twice daily and let dry completely.
Contraindications: None known.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions:
- This extract will stain clothing and other textiles.
- In some systemic conditions, using the A-V capsules internally with the A-V Topical externally is warranted.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

- Sangre de grado has demonstrated in clinical research to have antiviral activity against influenza, parainfluenza, Herpes simplex viruses I and II, and Hepatitis A and B.
- Copaiba contains several chemicals, including beta-bisabolene, which have been documented with antiviral actions.
- Bitter melon (and several of its plant chemicals) have been documented with *in vitro* antiviral activity against numerous viruses, including Epstein-Barr, Herpes, and HIV viruses. In an *in vivo* study, a leaf extract increased resistance to viral infections in humans and animals.
- Clavillia contains a group of amino acid-based proteins, called mirabilis antiviral proteins (MAPs). These chemicals have demonstrated antiviral actions in numerous tests and have been patented as antiviral agents.
- Huacapu contains a chemical called minquartynoic acid which was reported in 2002 to have effective antiviral actions against the HIV virus in as little as 2.2 mcg/ml.
- Mullaca has been demonstrated in laboratory tests to possess reverse transcriptase inhibitory effects. Other research reports antiviral actions against polio virus, Herpes virus, the measles virus, and HIV-I.
- Macela has been reported by two separate research groups with antiviral actions; HIV and pseudorabies were the viruses it was tested against.
- Ubos has demonstrated antiviral actions against Herpes, HIV, cocksacie, poliovirus, and rotoviruses in laboratory studies. It has also been shown to inhibit reverse transcriptase—a chemical required by many viruses to replicate.
- Pau d'arco contains two documented antiviral chemicals called lapachol and beta-lapachone. Extracts of this tree bark have demonstrated *in vitro* antiviral properties against Herpes I and II, influenza, polio, and Vesicular stomatitis viruses.
- Culen has evidenced antiviral and antibacterial actions in laboratory research. These actions are attributed to a chemical in the plant called bakuchiol which has been reported with broad-spectrum antimicrobial actions against numerous types of bacteria, mycobacteria, fungus, and viruses.
- Vassourinha contains scopadulcic acid B, scopadulin, and betulinic acid which have demonstrated strong antiviral properties at low dosages in several studies (including against Herpes simplex I in animal studies).

AMAZON C–F CAPSULES

Description: A synergistic formula of rainforest botanicals traditionally used in South America for colds, flu, and bacterial conditions. The plants in this formula have been independently documented in laboratory studies with antiviral and/or antibacterial activities and/or plant chemicals.
Traditional Uses: For colds, flu, staph and strep infections, pneumonia, and other bacterial infections.
Ingredients: A herbal blend of cat's claw (Uncaria tomentosa), amor seco (Desmodium adscendens), fedegoso (Cassia occidentalis), picão preto (Bidens pilosa), mullaca (Physalis angulata), clavillia (Mirabilis jalapa), simarouba (Simarouba amara), Brazilian peppertree (Schinus molle), gervâo (Stachytarpheta jamaicensis), and bitter melon (Momordica charantia).
Suggested Use: Take 2-3 capsules (650 mg each) three times daily (depending on body weight).
Contraindications: Not to be used during pregnancy or while breast-feeding.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions:

- Several plants in this formula have mild anticoagulant activity. People with blood disorders such as hemophilia should be monitored for this possible effect.
- This formula contains plants that have demonstrated significant antimicrobial properties. Supplementing the diet with probiotics and digestive enzymes is advisable if this product is used for longer than 15 days.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

- Cat's claw contains quinovic acid glycosides with documented anti-inflammatory and antiviral actions, alkaloids with documented immunostimulant actions, and carboxyl alkyl esters documented with immunostimulant, anti-inflammatory, cytoprotective and anitmutagenic actions.
- Amor seco, in ten different studies, is reported to contain chemicals called spasmogens that interfere with bronchoconstriction, histamine production, and leukotrienes.
- Fedegoso has demonstrated antibacterial actions against *E. coli*, *Salmonella*, *Bacillus*, *Pseudomonas*, and *Staphylococcus* in laboratory tests and antiviral actions against acute hepatitis in one human study.
- Picão preto has demonstrated in *in vitro* testing to possess broad-spectrum antibacterial actions against numerous bacteria, including *Mycoplasma pneumoniae, Klebsiella pneumoniae*, and *Mycobacterium tuberculosis*.
- Mullaca has demonstrated broad-spectrum antibacterial and antimycobacterial actions in laboratory studies against *Corynebacterium diphtheriae*, *Klebsiella*, *Neisseria*, *Pseudomonas*, *Staphylococcus*, *Streptococcus*, *Bacillus*, *Tubercule bacillus;* as well as, *Mycobacterium intracellulare*, *M. malmoense*, *M. avium*, *M. kansasi*, and *M. tuberculosis*.
- Clavillia contains patented mirabilis antiviral proteins (MAPs) which have shown specific antiviral and antifungal actions in laboratory research.
- Simarouba has demonstrated antiviral actions against influenza, polio, herpes, and vaccinia viruses, as well as antiamebic and antibacterial actions against other pathogens in published research.
- Brazilian peppertree has demonstrated very strong antibacterial actions against numerous bacteria and 2 patents using this plant's essential oil have been awarded for a topical bactericidal medicine used against *Pseudomonas* and *Staphylococcus* for humans and animals, and as an ear, nose, and/or throat preparation against bacteria.
- Gervâo contains a phytochemical named verbascoside which has been documented with antioxidant, antiviral, and antibacterial effects. It also contains hispidulin which has been reported to have anti-asthmatic, bronchodilator, and antispasmodic properties.
- Bitter Melon has demonstrated broad-spectrum antimicrobial activity against *E. coli, Staphylococcus, Pseudomonas, Salmonella, Streptobacillus*, and *Streptococcus*. It has also been reported with antiviral actions against Epstein-Barr, herpes, and HIV viruses.

AMAZON C–F EXTRACT

Description: A synergistic formula of rainforest botanicals traditionally used in South America for colds, flu, and bacterial conditions. The plants in this formula have been independently documented in laboratory studies with antiviral and/or antibacterial activities and/or plant chemicals. This product was formulated for children who cannot swallow capsules. It even tastes better than "the pink stuff."
Traditional Uses: For colds, flu, staph and strep infections, ear infections, pneumonia, and other bacterial infections.
Ingredients: A herbal blend of cat's claw, culen, amor seco, cumaseba, fedegoso, picão preto, mullaca, clavillia, simarouba, Brazilian peppertree, gervâo, ajos sacha, and bitter melon extracted in dis-tilled water and vegetable glycerine.
Suggested Use: Take 10 drops for every 20 pounds in body weight, 2-3 times daily. This extract can also be applied topically to the skin if desired.
Contraindications: Not to be used during pregnancy or while breast-feeding.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions: This formula contains plants that have demonstrated significant antimicrobial properties. Supplementing the diet with probiotics and digestive enzymes is advisable if this product is used for longer than 15 days.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.))

- Cat's claw contains quinovic acid glycosides with documented anti-inflammatory and antiviral actions as well as alkaloids with documented immunostimulant actions.
- Culen has been documented in various studies over the years to possess antibacterial, antifungal, anti-viral, and febrifuge actions.
- Amor seco, in ten different studies, is reported to contain chemicals called spasmogens that interfere with bronchoconstriction, histamine production, and leukotrienes.
- Cumaseba has been reported to kill *Mycobacterium tuberculosis*, *H. pylori*, several types of mouth bacteria that cause cavities and gingivitis, and other gram-positive strains of bacteria.
- Fedegoso has demonstrated antibacterial actions against *E. coli*, *Salmonella*, *Bacillus*, *Pseudomonas*, and *Staphylococcus* in laboratory tests and antiviral actions against acute hepatitis in one human study.
- Picão preto has demonstrated antibacterial actions in *in vitro* testing against numerous bacteria, including *Mycoplasma pneumoniae, Klebsiella pneumoniae*, and *Mycobacterium tuberculosis*.
- Mullaca has demonstrated broad-spectrum antibacterial and antimycobacterial actions in laboratory studies against *Corynebacterium diphtheriae*, *Klebsiella*, *Neisseria*, *Pseudomonas*, *Staphylococcus*, *Streptococcus*, *Bacillus*, *Tubercule bacillus;* as well as, 5 different *Mycobacterium* strains.
- Clavillia contains patented mirabilis antiviral proteins (MAPs) which have shown specific antiviral and antifungal actions in laboratory research.
- Simarouba has demonstrated antiviral actions against influenza, polio, herpes, and vaccinia viruses, as well as antiamebic and antibacterial actions against other pathogens in published research.
- Brazilian peppertree has demonstrated very strong antibacterial actions against numerous bacteria and 2 patents using this plant's essential oil have been awarded for a topical bactericidal medicine used against *Pseudomonas* and *Staphylococcus* for humans and animals, and as an ear, nose, and/or throat preparation against bacteria.
- Gervâo contains a phytochemical named verbascoside which has been documented with antioxidant, antiviral, and antibacterial effects. It also contains hispidulin which has been reported to have anti-asthmatic, bronchodilator, and antispasmodic properties.
- Ajos sacha has shown antibacterial, anti-inflammatory, antihistamine, and antispasmodic actions in laboratory tests.
- Bitter melon has demonstrated broad-spectrum antimicrobial activity against *E. coli, Staphylococcus, Pseudomonas, Salmonella, Streptobacillus*, and *Streptococcus*. It has also been reported with antiviral actions against Epstein-Barr, herpes, and HIV viruses.

MYCO CAPSULES or EXTRACT

Description: A combination of 8 plants which have been independently documented with antimycoplasmal, antimycobacterial and/or antibacterial actions.
Traditional Uses: For mycoplasmal and mycobacterial infections; for fibromyalgia, CFS, and other autoimmune disorders.
Ingredients: A herbal blend of mullaca (Physalis angulata), Brazilian peppertree (Schinus molle), anamu (Petiveria alliacea), clavillia (Mirabilis jalapa), macela (Achyrocline satureoides), fedegoso (Cassia occidentalis), picão preto (Bidens pilosa), and uva ursi (Arctostaphylos uva ursi).
Suggested Use: Capsules: Take 3 capsules (650 mg each) twice daily. Extract: Take 60 drops (2 ml) 2-3 times daily. **Contraindications:** None known.
Drug Interactions: None known.
Other Practitioner Observations and Possible Precautions:

- Several plants in this formula have been documented to reduce blood pressure in animal studies. Individuals with low blood pressure should be monitored for this effect.
- All of the plants in this formula have demonstrated antimicrobial effects in laboratory studies. Supplementing the diet with probiotics and digestive enzymes is advisable if this formula is used for longer than 30 days.
- Herxheimer reactions are common with this product. Increasing fluid intake is advised.
- For autoimmune disorders with an suspected underlying mycoplasmal infection, this formula is often combined with Amazon A-F capsules and Immune Support (2 capsules of each formula 2-3 times daily) for a cycle of two or three months.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

- Mullaca has demonstrated broad-spectrum antibacterial and antimycobacterial actions in laboratory tests against *Corynebacterium diphtheriae, Klebsiella, Neisseria, Pseudomonas, Staphylococcus, Streptococcus, Bacillus, Tubercule bacillus*; as well as, *Mycobacterium intracellulare, M. malmoense, M. avium, M. kansasi,* and *M. tuberculosis*.
- Brazilian peppertree has demonstrated very strong antibacterial actions against numerous bacteria and 2 patents using this plant's essential oil have been awarded for a topical bactericidal medicine used against Pseudomonas and Staphylococcus for humans and animals, and as an ear, nose, and/or throat preparation against bacteria.
- Anamu has demonstrated antimicrobial properties *in vitro* against numerous pathogens, including *Escherichia coli, Staphylococcus, Pseudomonas, Shigella, Mycobacterium tuberculosis,* several strains of fungi, and *Candida*. Researchers from Guatemala and Austria confirmed anamu's activity in *in vitro* and *in vivo* studies against several strains of protozoa, bacteria, and fungi.
- Clavillia contains patented mirabilis antiviral proteins (MAPs) which have shown specific antiviral, antibacterial, and antifungal actions in laboratory research.
- Macela has demonstrated in laboratory studies antiviral, antibacterial, antimycoplasmal, and immunostimulant actions.
- Fedegoso has demonstrated antibacterial actions against *E. coli, Salmonella, Bacillus, Pseudomonas, and Staphylococcus* in laboratory tests and antiviral actions against acute hepatitis in one human study.
- Picão preto's antimicrobial activity against *Klebsiella pneumonia, Bacillus, Neisseria gonorrhea, Pseudomonas, Staphylococcus*, and *Salmonella* have been reported through *in vitro* testing. It was also reported to have antimycobacterial activity towards *Mycobacterium tuberculosis* and *M. smegmatis*.
- Uva ursi has been documented in laboratory research with antimycoplasmal actions against *Ureaplasma urealyticum* and *Mycoplasma hominis*.

AJOS SACHA CAPSULES

Description: Ajos sacha is an evergreen tropical shrubby vine that is native to the Amazon rainforest. Its Spanish name, *ajos sacha*, means "false garlic" and refers to the strong garlic smell and flavor of the leaves when crushed. Ajos sacha contains some of the same active plant chemicals found in regular garlic. This plant is known by two botanical names: *Mansoa alliacea* and *Adenocalymma alliaceum.*
Traditional Uses: For coughs, colds, flu, pneumonia and upper respiratory conditions.
Suggested Use: Take 2 capsules (500 mg each) 2-3 times daily.
Contraindications: None reported.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions: None reported.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

Ajos sacha contains several of the main sulfur compounds that garlic does. It is these compounds which are responsible for the garlic-like odor and taste of ajos sacha. The wood of the vine was reported to contain two lapachone chemicals which are well known plant chemicals of the Bignoniaceae family and documented with anticancerous and antimicrobial actions. The leaves and/or flowers contain the known anti-inflammatory and antibacterial plant steroids: betasitosterol, stigmasterol, daucosterol, and fucosterol.

Ajos sacha has been reported with antimicrobial actions against fungi, plant viruses, and bacteria, which may help explain its long standing use for colds, flu, pneumonia and other upper respiratory infections. Researchers reported in two separate studies that ajos sacha was active *in vitro* against the fungal strains: *Alternaria*, *Fusarium*, *Microsporum*, and *Trichophyton*. In other laboratory tests the plant was shown to be effective against several plant viruses.

The sulfur compounds (the predominate ones being alliin and various allyl sulfides) in both garlic and ajos sacha have been studied by many and reported over the years to be able to lower cholesterol. When laboratory rats were fed dried ajos sacha flowers, scientists reported that cholesterol levels were lowered, and much like garlic, the absorption of cholesterol in the intestines was inhibited.

In research published in 1980, a water extract of ajos sacha leaves was reported to have an antioxidant effect which was attributed to the anthocyanin compounds found in the plant. Researchers confirmed ajos sacha's long standing use for arthritis and rheumatism when they reported that the plant was capable of inhibiting COX and well as reduced ear edema in a study with rats in 1997.

Antimicrobial Actions:

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Ushamalini, C., et al. "Management of charcoal rot of cowpea using biocontrol agents and plant products." *Indian Phytopathol.* 1997; 50(4): 504-507.
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Canapaty, S., et al. "Composition of leaf oil from *Adenocalymma alliaceum* and its antimicrobial activity." *Indian Perfumer* 2004; 48(3): 323-329.
Rao, A. M., et al. "Antimicrobial activity of the leaf extract of *Adenocalymma alliaceum*." *Indian Drugs.* 1985: 22(7): 364-365.

ANAMU CAPSULES

Description: Many biologically active compounds have been discovered in anamu, including flavonoids, triterpenes, steroids, and sulfur compounds. Anamu also contains a specific sulfur compound named dibenzyl trisulfide which is considered one of the main active chemicals with biological actions.
Traditional Uses: For colds, flu, and viruses, for candida and other yeast infections, and for urinary tract infections.
Suggested Use: Take 2 capsules (500 mg each) 2-3 times daily.
Contraindications: Methanol extracts of anamu were reported to cause uterine contractions in animal studies, therefore, it is contraindicated in pregnancy.
Drug Interactions: None published. However, due to anamu's natural coumarin content, it is conceivable that it may potentiate the effects of coumadin (Warfarin®).
Other Practitioner Observations and Possible Precautions:

- Anamu contains a low concentration of coumarin, which has a blood thinning effect. People with blood disorders such as hemophilia should be monitored closely for this possible effect.
- This plant has been shown to have hypoglycemic effects in mice. People with hypoglycemia should be monitored more closely for this possible effect.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

Many clinical reports and studies document that anamu shows broad-spectrum antimicrobial properties against numerous strains of bacteria, viruses, fungi, and yeast. In a 2002 study, anamu inhibited the replication of the bovine diarrhea virus; this is a test model for hepatitis C virus. A Cuban research group documented anamu's antimicrobial properties *in vitro* against numerous pathogens, including *E. coli*, *Staphylococcus, Pseudomonas,* and *Shigella* and, interestingly enough, their crude water extracts performed better than any of the alcohol extracts. A German group documented good activity against several bacteria, *Mycobacterium tuberculosis*, several strains of fungi, and *Candida.* Anamu's antifungal properties were documented by one research group in 1991, and again by a separate research group in 2001. Its antimicrobial activity was further demonstrated by researchers from Guatemala and Austria who, in separate studies in 1998, confirmed its activity *in vitro* and *in vivo* studies against several strains of protozoa, bacteria, and fungi.

Anamu has been found in both *in vivo* and *in vitro* studies to be an immunostimulant. In a 1993 study with mice, a water extract stimulated immune cell production (lymphocytes and Interleukin II). In the same year, another study with mice demonstrated that anamu increased natural killer cell activity by 100% and stimulated the production of Interleukin 2 and Interleukin 4. Additional research from 1997 to 2001 further substantiated anamu's immunostimulant actions in humans and animals. In one study they reported: “Based on these findings we suggest that *P. alliacea* [anamu] up-regulates antibacterial immune response by enhancing both Th1 function and the activity of NK cells.” Several other published studies detail anamu’s antitumor, antileukemic and anticancerous actions.

Antimicrobial Actions:

Kim, S., et al. “Antibacterial and antifungal activity of sulfur-containing compounds from Petiveria alliacea L.” J. Ethnopharmacol. 2006 Mar; 104(1-2): 188-92.
Kubec, R., et al. “The lachrymatory principle of Petiveria alliacea.” Phytochemistry. 2003 May; 63(1): 37-40.
Ruffa, M. J., et al. “Antiviral activity of Petiveria alliacea against the bovine diarrhea virus. Chemotherapy 2002; 48(3): 144-47.
Benevides, P. J., et al. “Antifungal polysulphides from Petiveria alliacea L.” Phytochemistry. 2001; 57(5): 743-7.
Caceres, A., et al. “Plants used in Guatemala for the treatment of protozoal infections. I. Screening of activity to bacteria, fungi and American trypanosomes of 13 native plants.” J. Ethnopharmacol. 1998 Oct; 62(3): 195-202.
Berger, I., et al. “Plants used in Guatemala for the treatment of protozoal infections: II. Activity of extracts and fractions of five Guatemalan plants against Trypanosoma cruzi.” J. Ethnopharmacol. 1998 Sep; 62(2): 107-15.
Caceres, A., et al. “Plants used in Guatemala for the treatment of dermatophytic infections. I. Screening for antimycotic activity of 44 plant extracts.” J. Ethnopharmacol. 1991; 31(3): 263-76.

ANDIROBA OIL

Description: Andiroba oil is an emollient nut oil which has been processed from the seeds or nuts of the Amazonian tree, *Carapa guianensis*.
Traditional Uses: For skin fungi and skin parasites.
Suggested Use: Apply to skin as desired, and/or take 60 drops (2 ml) internally twice daily.
Contraindications: Do not take internally while pregnant or while breast-feeding.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions: None reported.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

Tests of crude andiroba oil by Brazilian scientists have produced evidence of its anti-inflammatory and analgesic properties. The bark has also demonstrated *in vitro* antibacterial activity in other laboratory tests. Thus far, at least three chemicals found in andiroba have been found to have antiparasitic and insecticidal actions. A branch of the Brazilian government has been working with andiroba's insect repellant properties and is soon to produce an insect-repellent product utilizing andiroba oil that will be provided to the military and other government workers who are exposed to mosquitoes and other biting bugs in the forests of Brazil. In 1999, a U.S. patent was filed detailing that andiroba oil, when applied topically, prevented the formation of cellulite through a chemical enzyme-blocking action. (Unfortunately, they reported it didn't have to ability to get rid of existing cellulite). Some of the more recent research has focused on andiroba's anticancerous actions. In 2002, researchers reported that the seed oil could prevent and even reverse cervical dysplasia. In addition, the leaf, bark, seeds, and flowers have shown some activity against sarcoma cancer cells *in vitro*, and the crude oil passed a preliminary screening test to predict antitumor activity.

Synopsis of Phytochemistry: (Please see the online Tropical Plant Database for all cited chemicals.)

Andiroba oil is a rich source of essential fatty acids including oleic, palmitic, stearic, and linoleic acids. It yields up to 65% unsaturated fatty acids and can contain up to 9% linoleic acid. (Linoleic acid has shown in various studies over the years to be hypotensive, antimutagenic, and to lower cholesterol levels).

All parts of the andiroba tree (including the oil) tastes very bitter. This bitterness is attributed to a group of terpene chemicals called meliacins, which are very similar to the bitter antimalarial chemicals found in other tropical plants. One of these meliacins (named gedunin) has recently been documented with anti-parasitic properties and an antimalarial effect equal to that of quinine. Chemical analysis of andiroba oil, bark, and leaves has also identified the presence of another group of chemicals called limonoids. The anti-inflammatory and insect repellent properties of andiroba oil are attributed to the presence of these limonoids, including a novel one which has been named andirobin. Another limonoid called epoxyaza-diradione is found in andiroba oil; it has been documented with *in vitro* antitumor effects (neuroblastoma and osteosarcoma cancer cell lines were tested).

Synopsis of Traditional Uses: (Please see the online Tropical Plant Database for all cited uses.)

In Brazilian herbal medicine systems andiroba oil is used by city dwellers either in pure form or mixed with other oils or natural products. They apply it externally to wounds and bruises, use it as a massage oil and natural insect repellant, and employ it topically for many skin diseases and conditions, including psoriasis. A teaspoon of this preparation is also gargled for sore throats and taken internally for coughs. Andiroba is also still widely used as an insect repellent and for treating insect bites for both people and animals.

BELLACO CASPI EXTRACT

Description: Bellaco caspi contains two iridoid chemicals called plumericin and isoplumericin which have been found in the tree bark and the latex of this rainforest tree. These two chemicals have been reported with cytotoxic, anticancerous, antifungal and antibacterial actions in laboratory research.
Traditional Uses: As a wound healer and broad spectrum antimicrobial (bacteria, fungi, candida) internally and externally.
Suggested Use: Take 60 drops (2 ml) three times daily. Can also be applied topically to the skin if desired.
Contraindications: None reported.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions: None reported.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

Bellaco caspi's traditional uses for infected wounds, tuberculosis, syphilis, and even mange might be explained by the tree's documented antimicrobial actions. In 1998, researchers in Brazil reported that the bark evidenced a greater antifungal effect than the control drug that was used (nistatin) and related this action to the triterpenic esters found in the bark. Research published in Brazil in 2006 and 2004 also reported *in vitro* antimicrobial effects of the bark against, *Candida*, *E. coli, Staphylococcus, Bacillus, Mycobacterium phlei*, and other Gram-positive and Gram-negative pathogenic bacteria. The latex was also documented with *in vitro* actions against *Bacillus* and *Pseudomonas*.

Toxicity studies in laboratory animals indicate that the use of bellaco caspi at traditional dosages is non-toxic. Even when a bark extract was given to pregnant rats, there were no toxic, abortive, or birth defects reported.

Antimicrobial Actions:

Kuigoua, G., et al. "Minor Secondary Metabolic Products from the Stem Bark of Plumeria rubra Linn. Displaying Antimicrobial Activities. Planta Med. 2009 Nov 20.

Moreira, D., et al. "Actividades antimicrobiologicas dos stratos e fracoes obtido atraves de solventes organicos da casca da *Himatanthus sucuuba* do vale do Acre." *Anais Do XV Seminario De Iniciacao Cientifica* PIBIQ-CNPQ, 2006: Universidade Federal Do Acre, Rio Branco-Acre, Brazil.

Souza, W., et al. "Antimicrobial activity of alkaloidal fraction from barks of *Himatanthus lancifolius*." *Fitoterapia*. 2004 Dec; 75(7-8): 750-3.

Little, J., et al. "Plumericin; an antimicrobial agent from *Plumeria multiflora*." *Arch. Biochem.* 1951; 30(2): 445-52.

Persinos-Perdue, G., et al. " South American plants. III. Isolation of fulvoplumierin from *Himatanthus sucuuba* (Apocynaceae). *J. Pharm. Sci.* 1978; 67: 1322.

Wood, C. A., et al. "A bioactive spirolactone iridoid and triterpenoids from *Himatanthus sucuuba*." *Chem. Pharm. Bull.* 2001; 49(11): 1477-1478.

De Silva, J. R., et al. "Triterpenic esters from *Himatanthus sucuuba* (Spruce) Woodson." *Quimica Nova* 1998; 21(6): 702-704.

Abdel-Kader, M., et al. "Bioactive iridoids and a new lignan from *Allamanda cathartica* and *Himatanthus fallax* from the Suriname rainforest." *J. Nat. Prod.* 1997; 60(12): 1294-7.

Hamburger, M., et al. "Traditional medicinal plants of Thailand. XVII. Biologically active constituents of *Plumeria rubra*." *J. Ethnopharmacol.* 1991 Jul; 33(3): 289-92.

Kardono, L., et al. "Cytotoxic constituents of the bark of *Plumeria rubra* collected in Indonesia." *J. Nat. Prod.* 1990 Nov-Dec; 53(6):1447-55.

Jovel, E., et al. "An ethnobotanical study of the traditional medicine of the Mestizo people of Suni Mirano, Loreto, Peru." *J. Ethnopharmacol.* 1996; (53): 149-156.

Bolzani, V., et al. "Search for antifungal and anticancer compounds from native plant species of Cerrado and Atlantic Forest." *An. Acad. Bras. Cienc.* 1999; 71(2): 181-7.

BRAZILIAN PEPPERTREE EXTRACT

Description: Virtually all parts of this tropical tree, including its leaves, bark, fruit, seeds, resin, and oleoresin (or balsam) have been used medicinally by indigenous peoples throughout the tropics. Throughout South and Central America, Brazilian peppertree is reported to be an astringent, antibacterial, diuretic, digestive stimulant, tonic, antiviral, and wound healer.
Traditional Uses: As a broad-spectrum antimicrobial against bacterial, viral, and fungal infections, for *Candida* and yeast infections; and as a topical hemostatic, antiseptic, and vulnerary agent.
Ingredients: 100% pure Brazilian peppertree (Schinus molle) bark extracted in distilled water and 40% ethanol.
Suggested Use: Take 60 drops (2 ml) 2-3 times daily or as needed. Can also be used externally by applying to the affected area twice daily and letting dry completely. As a gargle or mouth rinse, dilute 60 drops (2 ml) in a small amount of warm water and swish in mouth 2-3 times daily.
Contraindications:
- This plant has been documented with uterine stimulant and uterine antispasmodic actions in animal studies and is contraindicated in pregnancy.

Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions:
- This plant has a traditional use in South America for heart problems (hypertension and arrhythmia). Studies with rats and dogs reported a hypotensive effect. People with hypotension should be monitored for this possible effect.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

In laboratory tests, the essential oil (as well as leaf and bark extracts) of Brazilian peppertree has demonstrated potent antimicrobial properties. Brazilian peppertree has displayed good-to-very strong *in vitro* antifungal actions against numerous fungi, as well as *Candida*. One research group indicated that the antifungal action of the essential oil was more effective than the antifungal drug Multifungin.™ The essential oil and leaves have demonstrated *in vitro* antibacterial activity against numerous bacterial strains. In 1996, a U.S. patent was awarded for an essential oil preparation of Brazilian peppertree as a topical bactericidal medicine used against *Pseudomonas* and *Staphylococcus* for humans and animals, and as an ear, nose, and/or throat preparation against bacteria. Another patent was awarded in 1997 for a similar preparation used as a topical antibacterial wound cleanser. In much earlier *in vitro* tests, a leaf extract of Brazilian peppertree demonstrated antiviral actions against several plant viruses.

Antimicrobial Actions:

Gomes, F., et al. "Antimicrobial lectin from Schinus terebinthifolius leaf." J Appl Microbiol. 2012 Nov 28.
Rocha, P., et al. "Synergistic Antibacterial Activity of the Essential Oil of Aguaribay (Schinus molle L.)." Molecules. 2012 Oct 12;17(10):12023-36. Montanari, R., et al. "Exposure to Anacardiaceae volatile oils and their constituents induces lipid peroxidation within food-borne bacteria cells." Molecules. 2012 Aug 14;17(8):9728-40
Moura-Costa, G., et al. "Antimicrobial activity of plants used as medicinals on an indigenous reserve in Rio das Cobras, Paraná, Brazil." J Ethnopharmacol. 2012 Sep 28;143(2):631-8.
Leite, S., et al. "Randomized clinical trial comparing the efficacy of the vaginal use of metronidazole with a Brazilian pepper tree (Schinus) extract for the treatment of bacterial vaginosis." Braz J Med Biol Res. 2011 Mar;44(3):245-52
Johann, S., et al. "Antifungal activity of schinol and a new biphenyl compound isolated from Schinus terebinthifolius against the pathogenic fungus Paracoccidioides brasiliensis." Ann Clin Microbiol Antimicrob. 2010 Oct 12;9:30.
Pereira, E., et al. "In vitro antimicrobial activity of Brazilian medicinal plant extracts against pathogenic microorganisms of interest to dentistry." Planta Med. 2011 Mar;77(4):401-4.
Johann, S., et al. "Antifungal activity of extracts of some plants used in Brazilian traditional medicine against the pathogenic fungus Paracoccidioides brasiliensis." Pharm Biol. 2010 Apr;48(4):388-96.
Johann, S., et al. "Antifungal activity of schinol and a new biphenyl compound isolated from Schinus terebinthifolius against the pathogenic fungus Paracoccidioides brasiliensis." Ann Clin Microbiol Antimicrob. 2010; 9: 30
Salazar-Aranda, R., et al. "Antimicrobial and Antioxidant Activities of Plants from Northeast of Mexico." Evid Based Complement Alternat Med. 201; 2011: 536139.
Molina-Salinas, G., et al. "Evaluation of the flora of Northern Mexico for in vitro antimicrobial and antituberculosis activity." J. Ethnopharmacol. 2006 Aug 23;
de Lima, M. R., et al. “Anti-bacterial activity of some Brazilian medicinal plants.” J. Ethnopharmacol. 2006 Apr; 105(1-2): 137-47.
de Melo, Jr., E. J., et al. “Medicinal plants in the healing of dry socket in rats: Microbiological and microscopic analysis.” Phytomedicine. 2002; 9(2): 109–16.

CARQUEJA EXTRACT

Description: Carqueja is one of the more widely known and used medicinal plants in Brazil and other parts of South America. It is as popular in Brazil as a natural herbal liver aid and digestive aid as milk thistle is in the United States and Europe. It is also used for all types of viruses.
Traditional Uses: For viral infections (stomach viruses, HIV, herpes simplex).
Ingredients: 100% pure carqueja whole herb (Baccharis genistelloides) extracted in distilled water and 40% ethanol.
Suggested Use: Take 60 drops (2 ml) 2 or more times daily.
Contraindications:

- Not to be used during pregnancy as carqueja has demonstrated uterine stimulant and abortive effects in rats.
- The use of this plant is contraindicated in persons with low blood pressure due to its documented hypotensive effects.
- Carqueja has been documented to lower blood glucose levels in human and animal studies. As such, it is contraindicated in persons with hypoglycemia. Diabetics should monitor their blood sugar levels more closely if they use carqueja.

Drug Interactions: None reported, however, it may increase the effect of diabetic and antihypertensive drugs.
Other Practitioner Observations and Possible Precautions:

- Carqueja has demonstrated antihepatotoxic effects in animal studies. As such, it may speed the clearance of some drugs metabolized in the liver (decrease the half-life), thereby reducing the pharmacological effect (and/or side effects) of certain drugs required to be metabolized in the liver.
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Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

Some of the more recent research on carqueja has focused on its antiviral properties. In a laboratory study published in 1999, researchers in Spain reported that a water extract of carqueja showed *in vitro* antiviral actions against *Herpes simplex I* and *Vesicular stomatitis* viruses at low dosages. Researchers in Texas had already reported in 1996 that a water extract of carqueja provided an *in vitro* inhibition of HIV virus replication in T-cells. In subsequent research, they've attributed this anti-HIV effect to a single chemical they found in the water extract of carqueja (3,5-dicaffeoylquinic acid) and reported that this plant chemical is a potent inhibitor of HIV at dosages as low as only 1 mcg/ml. In research published in 2006, Brazilian researchers reported that carqueja was active against *Staphylococcus*.

Antimicrobial Actions:

Samy, R., et al. "Therapeutic Potential of Plants as Anti-microbials for Drug Discovery." Evid Based Complement Alternat Med. 2010 September; 7(3): 283–294
Morales, G., et al. "Antimicrobial activity of three Baccharis species used in the traditional medicine of Northern Chile." Molecules. 2008; 13(4): 790-4.
Betoni, J., et al. “Synergism between plant extract and antimicrobial drugs used on *Staphylococcus aureus* diseases.” *Mem. Inst. Oswaldo Cruz.* 2006 Jun; 101(4): 387-90.
Sanchez Palomino, S., et al. “Screening of South American plants against human immunodeficiency virus: preliminary fractionation of aqueous extract from *Baccharis trinervis.*” *Biol. Pharm. Bull.* 2002; 25(9): 1147-50.
Abad, M., et al. “Antiviral activity of Bolivian plant extracts.” *Gen. Pharmacol*. 1999; 32(4): 499–503.
Abad, M., et al. “Antiviral activity of some South American medicinal plants.” *Phytother. Res*. 1999 Mar; 13(2): 142-6.
Robinson, W. E., et al. “Inhibitors of HIV-1 replication that inhibit HIV Integrase.” *Proc. Natl. Acad. Sci.* 1996; 93(13): 6326–31.
Abdel-Malek, S., et al. “Drug leads from the Kallawaya herbalists of Bolivia. 1. Background, rationale, protocol and anti-HIV activity.” *J. Ethnopharmacol*. 1996; 50(3): 157–66.

CHANCA PIEDRA EXTRACT or CAPSULES

Description: Chanca piedra means "stone breaker" throughout South America and the Amazon and refers to its traditional uses for kidney stones. Significant research on this plant reports effective antiviral actions against hepatitis.
Traditional Uses: For hepatitis, HIV and other viruses.
Suggested Use: Take 60 drops (2 ml) of a extract 2 or more times daily or 2-3 (500 mg each) capsules twice daily.
Contraindications:
- This plant has been documented with uterine stimulant and uterine antispasmodic actions in animal studies and is contraindicated in pregnancy.

Drug Interactions: May potentiate diuretic drugs.
Other Practitioner Observations and Possible Precautions:
- Chanca piedra has been documented to reduce blood pressure in animal studies. Individuals with low blood pressure should be monitored for this effect.
- Chanca piedra has been documented with female antifertility effects in one mouse study (the effect was reversed 45 days after cessation of dosing). While this effect has not been documented in humans, the use of the plant is probably contraindicated in women seeking pregnancy or taking fertility drugs.
- This plant has demonstrated hypoglycemic activity in animal studies. Individuals with hypoglycemia should be monitored more closely for this possible effect.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

In over 20 laboratory tests in animals and in humans, chanca piedra has shown significant antiviral effects against Hepatitis B (HBV). Not only has it been reported to provide a direct antiviral effect, it has also been reported to clear the surface antigen from chronic carriers. A Chinese research group published a study in 2001 which compared 30 chronic HBV patients taking a chanca piedra extract to 25 patients taking interferon for three months. Both treatments showed an equal effectiveness of 83%, but the chanca piedra group rated significantly higher in the normalization of liver enzymes and recovery of liver function than the interferon-treated group. They published yet another study in 2003 which attributed the anti-HVB effects mainly to four chemicals in chanca piedra: niranthin, nirtetralin, hinokinin, and geraniin. The Cochrane Hepato-Biliary Research Group in Copenhagen reviewed all the HBV published research (22 randomized trials) and published an independent review of the results. It stated that chanca piedra had "a positive effect on clearance of serum HBsAg (HBV surface antigen) comparable to interferon and was better than nonspecific treatment or other herbal medicines for HBV and liver enzyme normalization."

A Japanese research group reported that a simple water extract of chanca piedra inhibited HIV-1 reverse transcriptase in 1992. They attributed this effect to a plant chemical in chanca piedra called repandusinic acid A. When they tested this chemical individually it demonstrated significant toxicity to HIV-1 at very small dosages (a 90% *in vitro* inhibition using only 2.5 mcg). Bristol-Myers Squibb Pharmaceutical Research Institute isolated yet another chemical in chanca piedra with anti-HIV actions—a novel compound that they named niruriside and described in a 1996 study. A German research organization published their first study on chanca piedra and its application with HIV therapy (reporting a 70-75% inhibition of viral replication) in 2003.

In addition to these antiviral properties, the plant has also been documented other antimicrobial effects. In several laboratory studies chanca piedra demonstrated antibacterial actions against *Staphylococcus*, *Micrococcus*, and *Pasteurella* bacteria as well as *in vivo* and *in vitro* antimalarial properties. Research published in 2006 by researchers in India reported chanca piedra showed significant concentration-dependent antibacterial activity particularly against Gram-negative bacteria.

COPAIBA OIL

Description: Copaiba oil is an oily resin which has been extracted from the Amazonian tree, *Copaifera officinalis*.
Traditional Uses: As an antiseptic, disinfectant, and antimicrobial agent for internal and external bacterial infections, and for nail and skin fungi.
Suggested Use: Take 30-60 drops (1-2 ml) internally twice daily. Apply directly to skin as desired. Can also be added to a small amount of warm water and used as a mouth and throat gargle.
Contraindications: Do not take internally while pregnant or while breast-feeding.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions:

- Avoid contact with mucous membranes, as the resin can act as an irritant.
- Those sensitive to the resin may experience a measles-like rash accompanied by irritation, itching and/or tingling when used topically or taken internally. Discontinue use if these effects occur or dilute with another carrier oil.
- Do not take internally in large dosages (more than 5 ml). Large dosages have been reported to cause nausea, vomiting, fever, and rashes. Discontinue or reduce dosage if these effects occur.
- One chemical in copaiba resin has been documented to cause hemolysis of red blood cells *in vitro*. Although this effect has not been studied *in vivo*, it is probably best to avoid long-term oral use of the resin unless this possible effect can be monitored.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

The active biological properties of copaiba resin are attributed to a group of phytochemicals called sesquiterpenes (over 50% of the resin may be sesquiterpenes), diterpenes, and terpenic acids. These chemicals include caryophyllene, calamenene, and copalic, coipaiferic, copaiferolic, hardwickic, and kaurenoic acids. Several of these chemicals are novel ones found only in copaiba. Copaiba resin is the highest known natural source of caryophyllene, comprising up to 480,000 parts per million. Caryophyllene is a well known plant chemical which has been documented with strong anti-inflammatory effects, antibacterial actions against *Staphylococcus* & *Streptococci* and antifungal actions against *Candida* and nail fungus.

Copaiba's antibacterial properties were first documented in the 1960s and 1970s. Researchers again confirmed (in 2000 and 2002) that the resin as a whole (and, particularly, two of its diterpenes—copalic acid and kaurenic acid) demonstrated significant *in vitro* antimicrobial activity against Gram-positive bacteria. One of copaiba's other chemicals, kaurenoic acid, has also demonstrated selective antibacterial activity against Gram-positive bacteria in other recent studies.
Anti-microbial Actions:

Pieri, F. et al. "Bacteriostatic effect of copaiba oil (Copaifera officinalis) against Streptococcus mutans." Braz Dent J. 2012;23(1):36-8.
Santos, R., et al. "Antimicrobial activity of Amazonian oils against Paenibacillus species." J Invertebr Pathol. 2012 Mar;109(3):265-8.
Souza, A., et al. "Antimicrobial evaluation of diterpenes from Copaifera langsdorffii oleoresin against periodontal anaerobic bacteria." Molecules. 2011 Nov 18;16(11):9611-9.
Souz, a., ET AL. "Antimicrobial activity of terpenoids from Copaifera langsdorffii Desf. against cariogenic bacteria." Phytother Res. 2011 Feb;25(2):215-20.
Astani, A., et al. "Screening for antiviral activities of isolated compounds from essential oils." Evid. Based Complement. Alternat. Med. 2010.
Correia, A.., et al. "Amazonian plant crude extract screening for activity against multidrug-resistant bacteria." Eur. Rev. Med. Pharmacol. Sci. 2008 Nov-Dec; 12(6): 369-80.
Santos, A., et al. "Antimicrobial activity of Brazilian copaiba oils obtained from different species of the Copaifera genus." Mem .Inst. Oswaldo Cruz. 2008 May; 103(3):277-81.
Kuete, V., et al. "Antimicrobial activity of the methanolic extract, fractions and compounds from the stem bark of Irvingia gabonensis (Ixonanthaceae)." J. Ethnopharmacol. 2007 Oct; 114(1): 54-60.
Cotoras, M., et al. "Characterization of the antifungal activity on Botrytis cinerea of the natural diterpenoids kaurenoic acid and 3beta-hydroxy-kaurenoic acid." J. Agric. Food Chem. 2004 May; 52(10): 2821-6.
Sartori, M. R., et al. "Antifungal activity of fractions and two pure compounds of flowers from Wedelia paludosa (Acmela brasiliensis) (Asteraceae)." Pharmazie. 2003; 58(8): 567-9.
Tincusi, B. M., et al. "Antimicrobial terpenoids from the oleoresin of the Peruvian medicinal plant Copaifera paupera." Planta Med. 2002; 68(9): 808–12.

CUMASEBA EXTRACT

Description: Cumaseba is rich is flavonoids and isoflavones. It contains a significant amount of an isoflavone chemical called biochanin A which has been well studied and documented (over 150 studies published to date). Generally, biochanin A has been documented with antimicrobial, cancer-preventative actions, and direct anti-tumor and cytotoxic actions against colon, breast and prostate cancer cell lines.

Traditional Uses: For colds, flu, tuberculosis, and other upper respiratory bacterial infections, and for *Candida*, yeast infections and fungal infections.
Suggested Use: Take 60 drops (2 ml) 2-3 times daily or as needed. Can also be applied topically to the skin if desired.
Contraindications: None reported.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions: None reported.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

Scientists have confirmed through *in vitro* testing that cumaseba is a good antimicrobial. It has been reported to kill *Mycobacterium tuberculosis*, including several antibiotic-resistant strains, the stomach bacteria linked to ulcers and stomach cancer, *H. pylori,* several types of mouth bacteria that cause cavities and gingivitis, and other gram-positive strains of bacteria. Cumaseba has also been documented to have actions against fungus and *Candida*. Most of these researchers have attributed the antimicrobial actions of cumaseba to its isoflavone chemicals.

Antibacterial & Antiviral Actions:
Sithisarn, P., et al. "Differential antiviral and anti-inflammatory mechanisms of the flavonoids biochanin A and baicalein in H5N1 influenza A virus-infected cells." Antiviral Res. 2012 Oct 23.
Rojas, R., et al. “Larvicidal, antimycobacterial and antifungal compounds from the bark of the Peruvian plant *Swartzia polyphylla* DC.” *Chem. Pharm. Bull.* 2006; 54(2): 278-279.
Rojas, R., et al. “Anti-mycobacterium tuberculosis activity of Peruvian plants.” *Plant Med*. 2004: 101.
Herforth, A., et al. “Antifungal plants of the Peruvian Amazon: A survey of ethnomedical uses and biological activity.” Cornel University Publication 2002.
Osawa, K., et al. “Isoflavanones from the heartwood of *Swartzia polyphylla* and their antibacterial activity against cariogenic bacteria.” *Chem. Pharm. Bull.* 1992; 40(11): 2970-2974.
Du Bois, J. L., et al. “Dihydrolicoisoflavone, a new isoflavanone from *Swartzia polyphylla*.” *J. Nat. Prod*. 1995: 58(4): 629-632.

Antifungal & Anticandidal Actions:
Rojas, R., et al. “Larvicidal, antimycobacterial and antifungal compounds from the bark of the Peruvian plant *Swartzia polyphylla* DC.” *Chem. Pharm. Bull.* 2006; 54(2): 278-279.
Herforth, A., et al. “Antifungal plants of the Peruvian Amazon: A survey of ethnomedical uses and biological activity.” Cornel University Publication 2002.
Du Bois, J. L., et al. “Dihydrolicoisoflavone, a new isoflavanone from *Swartzia polyphylla*.” *J. Nat. Prod.* 1995: 58(4): 629-632.

HUACAPU EXTRACT

Description: Raintree's concentrated huacapu extract uses new and proprietary extraction methods to concentrate and preserve the active ingredients found in this wonderful rainforest tree. Concentration and extraction methods provide the equivalent of 500 mg huacapu bark per milliliter of extract. Huacapu is a huge canopy tree that can be found throughout the Amazon rainforest.
Traditional Uses: For viral infections (herpes, hepatitis, etc.), and as an antiseptic wound healer.
Suggested Use: Take 60 drops (2 ml) three times daily. Can also be applied topically to the skin if desired.
Contraindications: Not to be used during pregnancy or while breast-feeding.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions: Large dosages are reported to have a laxative or purgative effect.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

Huacapu bark contains triterpenes, xanthones, lipids, tannins, and acids. The main bioactive chemical in the bark is a lipid called minquartynoic acid. This plant chemical has been the subject of research. In 2000, a research group reported minquartynoic acid demonstrated effective antiviral actions against the HIV virus at as little as 2.2 mcg/ml. Other research reports that the chemical is cytotoxic to a large diverse line of cancer cells including human lung cancer cell lines, ovarian, colon, and neuroblastoma cancer cell lines. Another research group reported it passed the initial screening test for antitumor activity, as well as demonstrated actions against the malaria and leishmania parasites.

The research on huacapu to date is quite preliminary since scientists now seem more focused on its main bioactive chemical instead. In a study published in 1996 researchers reported that a methanol extract of huacapu bark demonstrated antibacterial actions against two antibiotic-resistant strains of *Staphylococcus*, as well as *Pseudomonas* and *Bacillus*. Researchers in the United States first reported in 1988 and 1989 that a water extract of huacapu bark passed the initial antitumor screening test, as well as an *in vitro* cell culture test against cancer cells in amounts less than 4 mcg/ml. This was reconfirmed by a European research group who published similar reports in 2003 and 2004.

Antimicrobial Actions (virus & bacteria):

Gung, B., et al. "Total synthesis of (-)-minquartynoic acid: an anti-cancer, anti-HIV natural product." Org Lett. 2002 Jul 25;4(15):2517-9.
Rashid, M. A., et al. "Absolute stereochemistry and anti-HIV activity of minquartynoic acid, a polyacetylene from Ochanostachys amentacea." Nat Prod. Lett. 2001; 15(1): 21-26 .
El-Seedi, H. R., et al. "Triterpenes, lichexanthone and an acetylenic acid from Minquartia guianensis." Phytochemistry. 1994; 35 (5): 1297-1299.
Jovel, E. M., et al. "An ethnobotanical study of the traditional medicine of the Mestizo people of Suni Mirano, Loreto, Peru." J. Ethnopharmacol. 1996; 53: 149-156.

Antiparasitic Actions (malaria & leishmania):

Ruiz, L., et al. "Plants used by native Amazonian groups from the Nanay River (Peru) for the treatment of malaria." J Ethnopharmacol. 2011 Jan 27;133(2):917-21.
Gachet, M., et al. "Assessment of anti-protozoal activity of plants traditionally used in Ecuador in the treatment of leishmaniasis." J Ethnopharmacol. 2010 Mar 2;128(1):184-97.
Rasmussem, H. B., et al. "Absolute configuration and antiprotozoal activity of minquartynoic acid." J. Nat. Prod. 2000; 63(9): 1295-1296.

JATOBA EXTRACT

Description: Chemical analysis of jatobá shows that it is rich in biologically active compounds including diterpenes, sesquiterpenes, flavonoids, and oligosaccharides. The phytochemical makeup of jatobá is very similar to another resin-producing rainforest tree, copaiba. Some of these same chemicals occurring in both plants (such as copalic acid, delta-cadinene, caryophyllene and alpha-humulene) have shown to exhibit significant anti-inflammatory, antibacterial, antifungal and antitumor activities in clinical studies.
Traditional Uses: For *Candida* and yeast infections, mold contamination and/or allergies; and fungal infections (athlete's foot, nail fungus, etc.)
Ingredients: Jatoba bark (Hymenaea courbaril) extracted in distilled water and 40% ethanol.
Suggested Use: Take 60 drops (2 ml) 2 or more times daily.
Contraindications: Not to be used during pregnancy or while breast-feeding.
Drug Interactions: None known.
Other Practitioner Observations and Possible Precautions:

- Jatoba can provide a significant energy boost to some people. Take last daily serving prior to 4 pm to avoid possible sleep disturbances.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

Chemical analysis of jatoba shows that it is rich in biologically active compounds including diterpenes, sesquiterpenes, flavonoids, and oligosaccharides. The bark contains copalic acid, delta-cadinene, caryophyllene and alpha-humulene which have shown to exhibit significant anti-inflammatory, antibacterial, antifungal and antitumor activities in laboratory studies. Jatoba contains terpene and phenolic chemicals which are responsible for protecting the tree from fungi in the rainforest. In fact, the jatoba tree is one of the few trees in the rainforest that sports a completely clean trunk bark, without any of the usual mold and fungus found on many other trees in this wet and humid environment. These antifungal terpenes and phenolics have been documented in several studies over the years and the antifungal activity of jatoba is attributed to these chemicals. In addition to its antifungal properties, jatobá also has been documented to have antiyeast activity against a wide range of organisms including *Candida*. Other laboratory studies have been performed on jatoba since the early 1970s which have shown that it has antimicrobial, molluscicidal, and antibacterial activities, including *in vitro* actions against such organisms as *E. coli, Psuedomonas, Staphylococcus,* and *Bacillus*.

Anticandidal & Antifungal Actions:

Cavin, A., "Bioactive diterpenes from the fruits of Detarium microcarpum." J. Nat. Prod. 2006; 69(5): 768-73.
Abdel-Kader, M., et al. “Isolation and absolute configuration of ent-Halimane diterpenoids from Hymenaea courbaril from the Suriname rain forest.” J. Nat. Prod. 2002; 65(1): 11-5.
Yang, D., et al. “Use of caryophyllene oxide as an antifungal agent in an in vitro experimental model of onychomycosis.” Mycopathologia. 1999; 148(2): 79–82.
Hostettmann, K., et al. “Phytochemistry of plants used in traditional medicine.” Proceedings of the Phytochemical Society of Europe. Clarendon Press, Oxford. 1995.
Rahalison, L., et al. “Screening for antifungal activity of Panamanian plants.” Inst. J. Pharmacog. 1993; 31(1): 68–76.
Verpoorte, R., et al. “Medicinal plants of Surinam. IV. Antimicrobial activity of some medicinal plants.” J. Ethnopharmacol. 1987; 21(3): 315–18.
Arrhenius, S.P., et al. “Inhibitory effects of Hymenaea and Copaifera leaf resins on the leaf fungus, Pestalotia subcuticulari.” Biochem. Syst. Ecol. 1983; 11(4): 361–66.
Giral, F., et al. “Ethnopharmacognostic observation on Panamanian medicinal plants. Part 1.” Q. J. Crude Drug Res. 1979; 167(3/4): 115–30.
Marsaioli, A. J., et al. “Diterpenes in the bark of Hymenaea courbaril.” Phytochemistry. 1975; 14: 1882–83.
Pinheiro de Sousa, M., et al. “Molluscicidal activity of plants from Northeast Brazil.” Rev. Bras. Pesq. Med. Biol. 1974; 7(4): 389–94.

Anti-Viral Actions:

Cecilio, A., et al. "Screening of Brazilian medicinal plants for antiviral activity against rotavirus." J Ethnopharmacol. 2012 Jun 14;141(3):975-81.

JERGON SACHA CAPSULES or EXTRACT

Description: This rainforest plant has become very popular in Peruvian herbal medicine where jergon sacha root is being used for viral conditions.
Traditional Uses: For snake bites and spider bites and for viral conditions including hepatitis and HIV.
Suggested Use: Take 4 capsules (500 mg each) twice daily or take 60 drops (2 ml) of the extract 2 or more times daily.
Contraindications: None known.
Drug Interactions: None known.
Other Practitioner Observations and Possible Precautions: Some practitioners include this plant in their protocols for pancreatitis.

Quoted from the book: *The Healing Power of Rainforest Herbs*, by Leslie Taylor,
Square One Publishers, Inc. 2005

The use of jergon sacha for AIDS and HIV in Peru was fueled by several newspaper articles published in Peruvian newspapers and magazines beginning in the early 1990s. The subject of the articles was a Peruvian physician, Dr. Roberto Inchuastegui Gonzales, who was president of the Committee of AIDS and Transmissible Diseases at the Peruvian Institute of Social Security in Iquitos, Peru. The media reported that, in experiments with AIDS patients conducted from 1989 to 1993, the doctor administered two plant extracts with remarkable results. One was a rhizome extract of jergon sacha as an antiviral, and the other was an extract of two cat's claw vines (*Uncaria tomentosa* and *U. guianensis*), as immunostimulants. Dr. Inchuastegui reported that a majority of HIV patients treated had tested negative for the HIV virus and returned to normal lives after taking these two plant extracts for an average of six months. He has yet to publish any clinical trials. His work in Iquitos with AIDS patients has surfaced periodically in news and media reports over the last decade which continues to purport the use of jergon sacha for HIV and other viruses. This has fueled the market in Peru for the sale of jergon sacha and, in the late 1990s, news of his work was disseminated in Eastern Europe.

Despite the large and growing market for jergon sacha, not a single clinical study has been published on its actions. If jergon sacha's longstanding use as an effective snakebite remedy was clinically validated, it may explain its more recent use as an antiviral for HIV as well. The most recent class of drugs developed for HIV are called protease inhibitors. Protease inhibitors work by blocking an active component in HIV—its protease enzyme. With the protease enzyme blocked, HIV makes copies of its virus that are defective and can't infect new cells. In current (mainstream) HIV therapy, protease inhibitor drugs are usually combined with other antiviral drugs (which kill the virus directly) after the protease inhibitors have disabled its replication. Proteases are ubiquitously present in every cell of every living organism: they are enzymes that digest proteins.

It is well known that proteases are also main ingredients in snake venom. Typically the snakebite site is a necrotic area—the skin sloughs off due to action by proteases in the venom, which first turn the area bruised and swollen before digesting skin and tissue. The stronger the protease in the venom and its quantity relate directly to how much skin and tissue damage results at the site of the bite. For this reason, many herbal remedies that have been validated as snakebite remedies (especially those employed at the site of the bite) have been shown to be natural protease inhibitors also. In fact, many pharmaceutical company researchers bio-prospecting for new chemicals and drugs in the Amazon are very interested in those plants the Indians employ as snakebite remedies for just this reason. It may be possible that Dr. Inchuastegui stumbled across one of these natural protease inhibitors in his work with HIV patients and jergon sacha. Clinical research is still required however, to verify the mechanisms of action in jergon sacha against viruses and against snakebite and, particularly, if they are one and the same.

MATICO EXTRACT

Description: Matico contains many active chemicals including flavonoids, sequiterpenes, monoterpenes, heterocycles, phenylpropanoids, alkaloids, and benzenoids. A group of chemicals called chromenes have been found in the leaves (and its essential oil) which have evidenced toxic effects to cancer cells and bacteria. Other chemicals, including a group of bezenoid chemicals, have also demonstrated antibacterial and cytotoxic actions as well.
Traditional Uses: For colds, flu, coughs, bronchitis, pneumonia and other respiratory problems, and as an antiseptic wound healer.
Ingredients: 100% pure matico leaves (Piper aduncum) extracted in distilled water & vegetable glycerine.
Suggested Use: Take 60 drops (2 ml) 2-3 times daily or as needed. Can also be applied topically to the skin if desired.
Contraindications: None reported.
Drug Interactions: None reported.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

Matico has demonstrated broad spectrum antimicrobial actions which may help to explain its long history of use for various infections and infectious diseases. In various laboratory studies over the years, matico leaves and the essential oil from the leaves or fruits have demonstrated antibacterial actions against various Gram-positive and Gram-negative bacteria. It has also been reported with actions against fungi and yeast. In addition, researchers in France reported matico had antiviral actions against polio virus.

Antibacterial Actions:
Kloucek, P., et al. "Antibacterial screening of some Peruvian medicinal plants used in Calleria district." *J. Ethnopharmacol*. 2005 Jun; 99(2): 309-12.
Orjala, J., et al. "New monoterpene-substituted dihydrochalcones from *Piper aduncum*." *Helv. Chim. Acta* 1993; 76(4): 1481-1488.
Lemos, T. L. G., et al. "Antimicrobial activity of essential oils of Brazilian plants." *Phytother. Res*. 1990; 4(2): 82-84.
Lentz, D. L., et al. "Antimicrobial properties of Honduran medicinal plants." *J. Ethnopharmacol*, 1998; 63(3): 253-263.
Trillini, B., et al. "Chemical composition and antimicrobial activity of essential oil of *Piper angustifolium*." *Planta Med.* 1996; 62(4): 372-373.
Orjala, J., et al. "Cytotoxic and antibacterial dihydrochalcones from *Piper aduncum*." *J. Nat. Prod.* 1994; 57(1): 18-26.
Orjala, J., et al. "Three new prenylated benzoic acid derivatives and molluscicidal sesquiterpenoids from *Piper aduncum* leaves." *Planta Med.* Suppl. 1992; 58(1) A714-.
Orjala, J., et al. "Five new prenylated p-hydroxybenzoic acid derivatives with antimicrobial and molluscicidal activity from *Piper aduncum* leaves." *Planta Med.* 1993; 59(6): 546-551.
Orjala, J., et al. "Aduncamide, a cytotoxic and antibacterial beta-phenylethylamine-derived amide from *Piper aduncum*." *Nat. Prod. Lett.* 1993; 2(3): 231-236.

Antifungal Actions:
Braga, F. G., et al. "Antileishmanial and antifungal activity of plants used in traditional medicine in Brazil." J. Ethnopharmacol. 2007 May; 111(2): 396-402.
Navickiene, H., et al. "Composition and antifungal activity of essential oils from *Piper aduncum, Piper arboreum* and *Piper tuberculatum*." *Quim. Nova.* 2006; 20(3): 467-470.
Lemos, T. L. G., et al. "Antimicrobial activity of essential oils of Brazilian plants." *Phytother. Res*. 1990; 4(2): 82-84.
Lentz, D. L., et al. "Antimicrobial properties of Honduran medicinal plants." *J. Ethnopharmacol*, 1998; 63(3): 253-263.
Trillini, B., et al. "Chemical composition and antimicrobial activity of essential oil of *Piper angustifolium*." *Planta Med*. 1996; 62(4): 372-373.
Lago, J. H., et al. "Benzoic acid derivatives from *Piper* species and their fungitoxic activity against *Cladosporium cladosporioides* and *C. sphaerospermum*." *J. Nat. Prod.* 2004; 67(11):1783-8.

Anti-Candidal & Anti-yeast Actions:
Lemos, T. L. G., et al. "Antimicrobial activity of essential oils of Brazilian plants." *Phytother. Res.* 1990; 4(2): 82-84.
Lentz, D. L., et al. "Antimicrobial properties of Honduran medicinal plants." *J. Ethnopharmacol.* 1998; 63(3): 253-263.
Trillini, B., et al. "Chemical composition and antimicrobial activity of essential oil of *Piper angustifolium*." *Planta Med.* 1996; 62(4): 372-373.

Antiviral Actions:
Lohezic, L. E., et al. "Antiviral and cytotoxic activities of some Indonesian plants." *Fitoterapia*. 2002 Aug; 73(5): 400-5.

PAU D'ARCO EXTRACT

Description: The chemical constituents and active ingredients of pau d'arco have been well documented. The plant contains a large amount of chemicals known as quinoids, and a small quantity of benzenoids and flavonoids. These quinoids (and, chiefly, anthraquinones, furanonaphthoquinones, lapachones, and naphthoquinones) have shown the most documented biological activity and are seen to be the center of the plant's efficacy as an herbal remedy.
Traditional Uses: For *Candida*, yeast, and other fungal infections (taken internally and used as a douche or topically); for colds, flu, and other upper-respiratory bacterial and viral infections; and for sexually transmitted diseases (syphilis, gonorrhea, etc.).
Ingredients: Pau d'arco bark (Tabebuia impetiginosa) extracted in distilled water and 40% ethanol.
Suggested Use: Take 60 drops (2 ml) 2 or more times daily. As a douche, dilute 2 teaspoons in a small amount of warm water and use once daily for three consecutive days.
Contraindications: Not to be used during pregnancy or while breast-feeding.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions: Large single dosages of pau d'arco decoctions may cause gastrointestinal upset and/or nausea.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

Pau d'arco contains a plant chemical named lapachol which has documented antimalarial, antiseptic, antiviral, bactericidal, fungicidal, insecticidal, pesticidal, schistosomicidal, termiticidal, and viricidal actions. Another chemical in the bark, beta-lapachone, has been demonstrated in laboratory studies to have antibacterial, antifungal, and antiviral actions. Antimicrobial properties of many of pau d'arco's other active phytochemicals were demonstrated in several laboratory studies, in which they exhibited strong *in vitro* activity against bacteria, fungi, and yeast (including *Candida, Aspergillus, Staphylococcus, Streptococcus, Helicobacter pylori, Brucella, tuberculosis*, pneumonia, and dysentery). In addition to its isolated chemicals, a hot water extract of pau d'arco demonstrated antibacterial actions against *Staphylococcus aureus, Helicobacter pylori*, and *Brucella*. In other *in vitro* clinical research an extract of the bark was shown to have strong activity against 11 fungal and yeast strains. Pau d'arco and its chemicals also have demonstrated *in vitro* antiviral properties against various viruses, including Herpes I and II, influenza, polio virus, and vesicular stomatitis virus. Its antiparasitic actions against various parasites (including malaria, schistosoma, and trypanosoma) have been confirmed as well.

Antimicrobial Actions:

Hofling, J., et al. "Antimicrobial potential of some plant extracts against Candida species." Braz J Biol. 2010 Nov;70(4):1065-8.
Melo e Silva, F., et al. "Evaluation of the antifungal potential of Brazilian Cerrado medicinal plants." Mycoses. 2009 Nov;52(6):511-7.
Pereira, E. M., et al. "Tabebuia avellanedae naphthoquinones: activity against methicillin-resistant staphylococcal strains, cytotoxic activity and in vivo dermal irritability analysis." Ann. Clin. Microbiol. Antimicrob. 2006 Mar; 5: 5.
Park, B. S., et al. "Antibacterial activity of Tabebuia impetiginosa Martius ex DC (Taheebo) against Helicobacter pylori." J. Ethnopharmacol. 2006 Apr; 105(1-2): 255-62.
Park, B. S., et al. "Selective growth-inhibiting effects of compounds identified in Tabebuia impetiginosa inner bark on human intestinal bacteria." J. Agric. Food Chem. 2005 Feb; 23;53(4): 1152-7.
Park, B. S., et al. "Antibacterial activity of Tabebuia impetiginosa Martius ex DC (Taheebo) against Helicobacter pylori." J. Ethnopharmacol. 2005 Dec;
Machado, T. B., et al. "In vitro activity of Brazilian medicinal plants, naturally occurring naphthoquinones and their analogues, against methicillin-resistant Staphylococcus aureus." Int. J. Antimicrob. Agents. 2003; 21(3): 279-84.
Portillo, A., et al. "Antifungal activity of Paraguayan plants used in traditional medicine." J. Ethnopharmacol. 2001; 76(1): 93–8.
Nagata, K., et al. "Antimicrobial activity of novel furanonaphthoquinone analogs." Antimicrobial Agents Chemother. 1998; 42(3): 700–2.
Binutu, O. A., et al. "Antimicrobial potentials of some plant species of the Bignoniaceae family." Afr. J. Med. Sci. 1994; 23(3): 269–73.
Giuraud, P., et al. "Comparison of antibacterial and antifungal activities of lapachol and b-lapachone." Planta Med. 1994; 60: 373–74.
Li, C. J., et al. "Three inhibitors of type 1 human immunodeficiency virus long terminal repeat-directed gene expression and virus replication." Proc. Nat'l. Acad. Sci. USA 1993; 90(5): 1839–42.
Anesini, C., et al. "Screening of plants used in Argentine folk medicine for antimicrobial activity." J. Ethnopharmacol. 1993; 39(2): 119–28.

SANGRE DE GRADO RESIN

Description: A pure natural resin extracted from the sangre de grado tree which is also called *dragon's blood*. It has been independently documented with antimicrobial and vulnerary actions.
Traditional Uses: As an hemostatic, antiseptic, and vulnerary agent for wounds, burns, cuts, hemorrhoids, and tooth extractions; as an antiviral agent for herpes virus ulcers (taken internally and applied topically); for skin fungi, rashes, and dermatitis; and for dysentery and diarrhea.
Ingredients: 100% pure sangre de grado resin (Croton lechleri).
Suggested Use: Take 15 drops (.5 ml) in water or juice twice daily. Use topically by applying liberally to affected area of skin. Avoid contact with eyes.
Contraindications: Not to be used during pregnancy or while breast-feeding.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions: Will stain clothing and other textiles.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

Extracts of sangre de grado have demonstrated antiviral activity against influenza, parainfluenza, Herpes simplex viruses I and II, and Hepatitis A and B. The antiviral and anti-diarrheal properties of sangre de grado have come to the attention of the pharmaceutical industry over the last 10 years. A U.S.-based pharmaceutical company has filed patents on three pharmaceutical preparations that contain antiviral constituents and novel chemicals (a group of plant flavonoids they've named SP-303), extracted from the bark and resin of sangre de grado. Their patented drugs include an oral product for the treatment of respiratory viral infections, a topical antiviral product for the treatment of herpes, and an oral product for the treatment of persistent diarrhea.

Scientists have attributed many of the biologically active properties of sangre de grado to two main active constituents: an alkaloid named taspine, and a lignan named dimethylcedrusine. The taspine alkaloid from sangre de grado was first documented with anti-inflammatory actions in 1979. In 1985, taspine was documented with anti-inflammatory, antitumorous (against sarcomas), and antiviral actions. The wound-healing action of sangre de grado resin was first related to the taspine alkaloid in 1989. Several later studies also concentrated on the vulnerary and antitumorous properties of taspine. The lignan dimethylcedrusine was isolated by scientists in 1993 and was shown to play a central role in sangre de grado's effective wound-healing action. This Belgian study revealed that the crude resin stimulated contraction of wounds, helped in the formation of a crust/scab at the wound site, regenerated skin more rapidly, and assisted in the formation of new collagen. This study indicated that the crude resin was found to be four times more effective at wound healing and collagen formation than its isolated chemicals (and healed wounds 10-20 times faster than using nothing at all) in animal studies.

In other laboratory studies, sangre de grado has been documented with antibacterial, antifungal, antiseptic, analgesic, anesthetic, anti-inflammatory, antihemorrhagic, antioxidant, and neurasthenic actions.

Antimicrobial Actions:

Rodriguez-Garcia, A., et al. "Development and in vitro evaluation of biopolymers as a delivery system against periodontopathogen microorganisms." Acta Odontol Latinoam. 2010;23(2):158-63.
Gurgel, L. A., et al. “In vitro antifungal activity of dragon's blood from Croton urucurana against dermatophytes.” J. Ethnopharmacol. 2005; 97(2): 409-12.
Williams, J. E. “Review of antiviral and immunomodulating properties of plants of the Peruvian rainforest with a particular emphasis on Una de Gato and Sangre de Grado.” Altern. Med. Rev. 2001; 6(6): 567–79.
Sidwell R., et al. “Influenza virus-inhibitory effects of intraperitoneally and aerosol-administered SP-303, a plant flavonoid.” Chemotherapy. 1994; 40(1): 42–50.
Chen, Z. P., et al. “Studies on the anti-tumour, anti-bacterial, and wound-healing properties of dragon’s blood.” Planta Med. 1994; 60(6): 541–45.
Rao, G. S., et al. “Antimicrobial agents from higher plants. Dragon's blood resin.”J. Nat. Prod. 1982 Sep-Oct; 45(5): 646-8.

SIMAROUBA EXTRACT

Description: The main active group of chemicals in simarouba are called quassinoids. Several of the quassinoids found in simarouba, such as ailanthinone, glaucarubinone, and holacanthone, are considered the plant's main therapeutic constituents and are the ones documented to be antiprotozal, anti-amebic, antimalarial, and even toxic to cancer and leukemia cells. Raintree Nutrition's simarouba concentrated extract uses new and proprietary extraction methods to concentrate and preserve the active ingredients found in this rainforest plant. It is rich in active and beneficial phytochemicals which occur naturally in this plant. The extraction methods used provides the equivalent of approximately 500 mg of simarouba bark per milliliter of extract—resulting in a highly potent concentrated extract.
Traditional Uses: For dysentery (amebic and bacterial) and diarrhea; for viral infections; for intestinal worms and internal parasites; for malaria; as an astringent to stop bleeding internally (stomach ulcers, hemorrhages, etc) and externally for wounds.
Suggested Use: Take 60 drops (2 ml) 2-3 times daily or as needed. Can also be applied topically to the skin as desired.
Contraindications: None reported.
Drug Interactions: None known.
Other Practitioner Observations and Possible Precautions: Reported side effects at high dosages (approx. 5 times the suggested use) include increased perspiration and urination, nausea, and/or vomiting.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

The Merck Institute reported that simarouba bark was 91.8% effective against intestinal amebas in humans in a 1944 study and, in 1962, other researchers found that the seeds of simarouba showed active antiamebic activities in humans. In the 1990s scientists again documented simarouba's ability to kill the most common dysentery-causing organism, *Entamoeba histolytica*, as well as two diarrhea-causing bacteria, *Salmonella* and *Shigella*.

Scientists first looked at simarouba's antimalarial properties in 1947, when they determined a water extract of the bark (as well as the root) demonstrated strong activity against malaria in chickens. This study showed that doses of only 1 mg of bark extract per kg of body weight exhibited strong antimalarial activity. When new strains of malaria with resistance to our existing antimalarial drugs began to develop, scientists began studying simarouba once again. Studies published between 1988 and 1997 demonstrated that simarouba and/or its three potent quassinoids were effective against malaria *in vitro* as well as *in vivo*.

Researchers have also reported over the years in several studies that simarouba is an effective antiviral. In laboratory studies the bark was shown to have strong activity against influenza, herpes type 2, polio, and vaccinia viruses. Other published studies indicate simarouba has *in vivo* and *in vitro* anti-leukemic actions.

Antimicrobial Actions:

Valdes, A., et al. "In vitro anti-microbial activity of the Cuban medicinal plants Simarouba glauca DC, Melaleuca leucadendron L and Artemisia absinthium L." Mem Inst Oswaldo Cruz. 2008 Sep;103(6):615-8.
Apers, S., et al. "Antiviral activity of simalikalactone D, a quassinoid from Quassia africana." Planta Med. 2002 Jan;68(1):20-4.
Morre, D. J., et al. “Effect of the quassinoids glaucarubolone and simalikalactone D on growth of cells permanently infected with feline and human immunodeficiency viruses and on viral infections.” Life Sci. 1998; 62(3): 213-9.
Rahman, S., et al. “Anti-tuberculosis activity of quassinoids.” Chem. Pharm. Bull. 1997; 45(9): 1527-9.
Kaif-A-Kamb, M., et al. “Search for new antiviral agents of plant origin.” Pharm. Acta Helv. 1992; 67(5–6): 130–147.
Caceres, A. “Plants used in Guatemala for the treatment of gastrointestinal disorders. 1. Screening of 84 plants against enterobacteria." J. Ethnopharmacol. 1990; 30(1): 55–73.
May, G., et al. “Antiviral activity of aqueous extracts from medicinal plants in tissue cultures.” Arzneim-Forsch 1978; 28(1): 1–7.

TAMAMURI EXTRACT

2 Fluid Ounces / 60 ml

Description: Tamamuri is a large canopy tree of the Amazon rainforest that grows 15 to 25 meters high. It is found throughout the lower elevations of the Amazon basin, usually growing alongside streams and rivers. The bark of this rainforest tree has a long history of use among the Indians and local people in the Amazon.
Traditional Uses: For syphilis; for *Candida* and skin fungi; and for gastric ulcers (*H. pylori)* and other gastrointestinal problems.
Suggested Use: Take 60 drops (2 ml) 2-3 times daily or as needed.
Contraindications: None reported.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions: None.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

Researchers at Cornell University reported that tamamuri bark showed *in vitro* antibacterial actions against *Bacillus* and *Staphylococcus* in research published in 2002. This same study reported that it was also active against *Helicobacter pylori* as well as *Candida albicans* which confirms two other traditional uses of the bark: for gastric ulcers and yeast infections. They also reported that it was active against a common strain of skin fungus.

Tamamuri's long-standing use for arthritis and rheumatism has been the subject of research by Western scientists. In 2003, Brazilian researchers reported that crude extracts of tamamuri bark reduced inflammation induced by various means in laboratory rats. Other researchers have reported that two chemicals in tamamuri (mururin A and B) have the ability to inhibit protein kinase C (PKC) and protein kinase A (PKA). PKC is involved with various conditions and is one of the chemicals that the body uses to actually produce inflammation. People with autoimmune disorders, arthritis, and rheumatoid arthritis usually have elevated PKC levels, and PKC inhibitors are a new class of drugs under research for these types of conditions.

In addition to autoimmune disorders and arthritis, PKC, as well as PKA, is also thought to play a role in cancer and tumor cell growth. Tamamuri's ability to inhibit PKC and PKA might be the reason behind its documented actions against cancer cells. Researchers have reported that a crude extract of tamamuri bark was cytotoxic to human colon and lung cancer cell lines *in vitro* as well as toxic to a leukemia cell line (including a drug-resistant leukemic cell line). However, one of these research groups attributed the cytotoxic action, not to the PKC-inhibitor mururin chemicals, but to the newly discovered brosimacutin chemicals. They have yet to report the mechanism by which these new chemicals can kill cancer cells.

Toxicity studies with rats conducted in Brazil indicate that tamamuri is non-toxic and without any demonstrable negative side effects.

Antimicrobial Actions:

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Herforth, A., et al. "Amazonian Women's Medicine: Treatments for Mycoses." Poster: Society for Economic Botany 2002 vol 56(4).
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UBOS EXTRACT

Description: Ubos is native to the lowland moist forests of the Amazon in Peru, Brazil, Venezuela, Bolivia, Colombia, the three Guianas. The tree grows quite rapidly and is sometimes planted as living fence posts as well as for shade and for its fruits and medicinal uses.
Traditional Uses: As an astringent and antiseptic wound healer, and for rotoviral diarrhea and dysentery.
Ingredients: 100% pure ubos bark (Spondias mombin) extracted in distilled water and alcohol.
Suggested Use: Take 60 drops (2 ml) 2-3 times daily or as needed. Can also be applied to the skin if desired.
Contraindications: 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.
Drug Interactions: None reported.
Other Practitioner Observations and Possible Precautions: None.

Synopsis of research: (Please see the online Tropical Plant Database for all cited research.)

Ubos bark has been reported with antibacterial actions in test tube studies against *Pseudomonas aeruginosa* and *Bacillus cereus*. It was also reported to inhibit human rotovirus by 82% *in vitro* which might explain its long standing use for diarrhea. In other *in vitro* testing researchers also reported that ubos bark has strong antifungal and anticandidal actions.

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 an anticancerous effect in their animal studies. Ubos bark has also been reported with COX-inhibitor actions which may explain its traditional uses for arthritis and other inflammatory conditions.

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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.

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.

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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

Corthout, J., et al. "Antivirally active substances from *Spondias mombin* L." *Pharm. Weekbl.* 1987; 9(4): 222.

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.

Corthout, J., et al. "Antiviral caffeoyl esters from *Spondias mombin*." *Phytochemistry.* 1992; 31(6): 1979-1981.

Ramirez, V., et al., "Vegetales empleados en medicina tradicional Norperuana." Banco Agrario Del Peru & Nacl Univ Trujillo, Trujillo, Peru, June, 1988 Page 54.

Coates, N., et al. "SB-202742, A novel beta-lactamase inhibitor isolated from *Spondias mombin*." *J. Nat. Prod.* 1994; 57(5): 654-657.

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.