

Technical Data Report
for
SARSAPARILLA

Smilax officinalis



Written by Leslie Taylor, ND Published by Sage Press, Inc.

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Sarsaparilla

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Family: Smilacaceae

Genus: *Smilax*

Species: *officinalis*, *aristolochiaefolia*, *glabra*, *febrifuga*, *ornata*, *regelii*, *japicanga*

Synonyms: *Smilax medica*

Common Names: Sarsaparilla, salsaparrilha, khao yen, saparna, smilace, smilax, zarzaparilla, jupicanga

Part Used: Root

Sarsaparilla is a brambled, woody vine that grows up to 50 m long, with paired tendrils for climbing (often high into the rainforest canopy). It produces small flowers and black, blue, or red berry-like fruits which are eaten greedily by birds. *Smilax*, a member of the lily family, is native to tropical and temperate parts of the world and comprises about 350 species worldwide. It is native to South America, Jamaica, the Caribbean, Mexico, Honduras, and the West Indies. The name *sarsaparilla* or *zarzaparilla* comes from the Spanish word *zarza* (bramble or bush), *parra* (vine), and *illa* (small)—a small, brambled vine. The stems of many *Smilax* species are covered with prickles and, sometimes, these vines are cultivated to form impenetrable thickets (which are called *catbriers* or *greenbriers*). The root, used for medicinal purposes, is long and tuberous—spreading 6–8 feet—and is odorless and fairly tasteless. Many species of *Smilax* around the world share the name *sarsaparilla*; these are very similar in appearance, uses, and even chemical structure. These include *S. officinalis*, *S. japicanga*, and *S. febrifuga* from South America (Brazil, Ecuador and Colombia); *S. regelii*, *S. aristolochiaefolia*, and *S. ornata* from Mexico and Latin America; and *S. glabra* from China. Sarsaparilla vine should not be confused with the large sasarilla and sassafras trees (the root and bark of which were once used to flavor root beer). Sarsaparilla has been used as an ingredient in root beer and other beverages for its foaming properties—not for its flavoring properties.

Sarsaparilla root has been used for centuries by the indigenous peoples of Central and South America for sexual impotence, rheumatism, skin ailments, and as a general tonic for physical weakness. It has long been used by tribes in Peru and Honduras for headaches and joint pain, and against the common cold. Many shamans and medicine men in the Amazon use sarsaparilla root internally and externally for leprosy and other skin problems (such as psoriasis and dermatitis.) Leprosy can be common in areas where the disease is carried by armadillos (and particularly where armadillos are “on the menu” in indigenous diets). Sarsaparilla root also was used as a general tonic by indigenous tribes in South America, where New World traders found it and introduced it into European medicine in the 1400s.

European physicians considered sarsaparilla root an alterative, tonic, blood purifier, diuretic, and diaphoretic. A *Smilax* root from Mexico was introduced into European medicine in 1536, where it developed a strong following as a cure for syphilis and rheumatism.¹ Since this time, the *Smilax* genus has had a long history of use for syphilis and other sexually-transmitted diseases throughout the world. With its reputation as a blood purifier, it was registered as an official herb in the U.S. Pharmacopoeia as a syphilis treatment from 1820 to 1910. From the 1500s to the present, sarsaparilla has been used as a blood purifier and general tonic and also has been used worldwide for gout, syphilis, gonorrhoea, rheumatism, wounds, venereal disease, arthritis, fever, cough, scrofula, hypertension, digestive disorders, psoriasis, skin diseases, and cancer.

Sarsaparilla contains the plant steroids sarsasapogenin, smilagenin, sitosterol, stigmasterol, and pollinastanol; and the saponins sarsasaponin, smilasaponin, sarsaparilloside, and sitosterol glucoside, among others.² The majority of sarsaparilla’s pharmacological properties and actions

have been attributed to these steroids and saponins. The saponins have been reported to facilitate the body's absorption of other drugs and phytochemicals,^{2,3} which accounts for its history of use in herbal formulas as an agent for bioavailability and herbal enhancement. Saponins and plant steroids found in many species of plants (including sarsaparilla) can be synthesized into human steroids such as estrogen and testosterone. This synthesis has never been documented to occur in the human body—only in the laboratory. Yet plant steroids and their actions in the human body have been a subject of much interest, sketchy research and, unfortunately, disinformation—mainly for marketing purposes. Sarsaparilla has been marketed (fraudulently) to contain testosterone and/or other anabolic steroids. While it is a rich source of steroids and saponins, it never has been proven to have any anabolic effects, nor has testosterone been found in sarsaparilla or any other plant source thus far.^{2,4} No known toxicity or side-effects have been documented for sarsaparilla; however, ingestion of large dosages of saponins may cause gastrointestinal irritation.^{4,5,6}

Flavonoids in sarsaparilla have been documented to have immunomodulatory and hepatoprotective activity.⁷ A U.S. patent was awarded in 2003 describing these flavonoids to be effective in treating autoimmune diseases and inflammatory reactions through their immunomodulating effects.⁸ Sarsapogenin and smilagenin were subjects of a 2001 U.S. patent which reported that these *Smilax* steroids had the ability to treat senile dementia, cognitive dysfunction, and Alzheimer's disease.⁹ In the patent's animal studies references, smilagenin reversed the decline of brain receptors in aged mice and restored the receptor levels to those observed in young animals, reversed the decline in cognitive function, and enhanced memory and learning.⁹ These studies, however, have not been published in any peer-reviewed journals—only in the context of the patent, thus far.

Clinical research has validated the traditional use of sarsaparilla for skin conditions such as psoriasis, eczema, acne, and leprosy. In 1942, it was reported to improve the condition of psoriasis dramatically (in the *New England Journal of Medicine*). There the results of a clinical study with 92 patients were published; it improved psoriasis lesions in 62% of cases and completely cleared lesions in 18% of cases.¹⁰ Individuals with psoriasis have been found to have high levels of endotoxins circulating in the bloodstream (endotoxins are cell wall fragments of normal gut bacteria).¹¹ Sarsaponin, one of sarsaparilla's main steroids, was found to bind to these endotoxins and remove them, thus improving psoriasis.¹⁰ This endotoxin-binding action is probably why the root has been used for centuries as a "blood purifier." Other health conditions associated with high endotoxin levels include eczema, arthritis, and ulcerative colitis. Sarsaparilla's effective use in the treatment of leprosy has been documented in a 1959 human trial.¹² The effectiveness of sarsaparilla in the treatment of adolescent acne caused by excessive androgens has received some experimental support as well.¹⁰

A recent (2001) U.S. patent was filed on sarsaparilla (*Smilax china*) for keratosis and respiratory diseases.¹³ This patent cited clinical observations and studies with children and human adults with *Psoriasis vulgaris*, pustular psoriasis, erythroderma psoriaticum lesions, and associated pruritis—reporting marked clinical improvements with dosages of 3–6 g daily. It also reported that, upon discontinuation of sarsaparilla after only two months of treatment, there was further gradual remission of lesions and no side effects. In addition, this patent indicated sarsaparilla was shown to be a prophylactic and therapeutic agent for respiratory and allergic diseases such as acute bronchitis, bronchial asthma, asthmatic bronchitis, chronic bronchitis, and bronchiectasis. Again, these studies and observations reported in the patent have yet to be published in any peer-reviewed journals.

Sarsaparilla has long been used in the treatment of syphilis. Clinical observations in China demonstrated that sarsaparilla was effective (according to blood tests) in about 90% of acute and 50% of chronic cases.² In the 1950s the antibiotic properties of sarsaparilla were documented;^{14,15} other studies documented its antifungal and antimycobacterial activities.^{16,17} Its anti-inflammatory activity has been demonstrated in several *in vitro* and *in vivo* studies, using different laboratory-induced models of arthritis and inflammation.^{18,19} One of these studies attributes the beneficial effect for arthritis to sarsaparilla's immunomodulatory action.¹⁹ Sarsaparilla also has demonstrated

hepatoprotective effects in rats, with researchers concluding that it is able to prevent immune-mediated liver injury.^{7,8,20} Improvement of appetite and digestion has been noted with sarsaparilla, as well as its diuretic actions in humans.²¹ The root has been reported to have stimulatory activity on the kidneys in humans and, in chronic nephritis, it was shown to increase the urinary excretion of uric acid.^{22,23}

Sarsaparilla is becoming more widely available in health food stores, with a variety of tablets, capsules, and tincture products sold today. In naturopathic and herbal medicine, it is used mostly in combination with other herbs for its depurative, tonic, detoxifying, blood purifying, and lymph-cleansing properties. It can be found as an ingredient in various herbal remedies made for skin disorders, libido enhancement, hormone balancing, and detoxification. It's also used commonly in herbal preparations as a synergist or bioavailability aid—as it is thought that the saponins in sarsaparilla root increase the absorption of other phytochemicals in the gut. Most of the sarsaparilla root in herbal commerce today comes from cultivation projects in Mexico and Latin America as well as China.

Documented Properties and Actions: Alterative, analgesic, antiallergic, antiasthmatic, antibiotic, antifungal, anti-inflammatory, antioxidant, antirheumatic, antiseptic, aphrodisiac, carminative, depurative, diaphoretic, diuretic, febrifuge, hepatoprotective, immunomodulatory, steroidal, stimulant, stomachic, tonic

Main Phytochemicals: Acetyl-parigenin, astilbin, beta-sitosterol, caffeoyl-shikimic acids, dihydroquercetin, diosgenin, engeletin, essential oils, epsilon-sitosterol, eucryphin, eurphylin, ferulic acid, glucopyranosides, isoastilbin, isoengetitin, kaempferol, parigenin, parillin, pollinastanol, resveratrol, rhamnose, saponin, sarasaponin, sarsaparilloside, sarsaponin, sarsasapogenin, shikimic acid, sitosterol-d-glucoside, smilagenin, smilasaponin, smilax saponins A–C, smiglaside A–E, smitilbin, stigmasterol, taxifolin, titogenin

Traditional Remedy: One-half to 1 cup of a standard root decoction 2–3 times daily. Alternatively, 3–4 grams of root powder in tablets or capsules or 5–10 ml of a standard tincture or fluid extract may be taken daily.

Contraindications: Large doses may cause gastrointestinal upset.

Drug Interactions: Sarsaparilla may increase the absorption of some drugs and compounds. Some report that it can increase the absorption of *Digitalis* glycosides while accelerating the elimination of hypnotic drugs.²

WORLDWIDE ETHNOBOTANICAL USES

Region	Uses
Argentina	Aphrodisiac, diaphoretic, rheumatism
Brazil	Alterative, anorexia, anuria, aphrodisiac, arthritis, calculi, depurative, diaphoretic, digestive, diuretic, dysuria, eczema, fever, gout, hypotonia, impotence, muscle, oliguria, pimples, psoriasis, purgative, rheumatism, skin, sterility, sudorific, syphilis, ulcer, urinary, urticaria, venereal disease
China	Abscess, aphrodisiac, arthritis, boil, cystitis, diarrhea, digestive, diuretic, dysentery, enteritis, fever, malaria, mercury poisoning, rheumatism, rheumatoid arthritis, skin, sores, stimulant, syphilis, tonic

Region	Uses
England	Abscess, alterative, anorexia, antiseptic, cancer, diaphoretic, diuretic, dysentery, eczema, ergogenic, gout, immune, impotence, infections, inflammation, leprosy, mercury poisoning, muscle, PMS, pruritis, psoriasis, rheumatism, rheumatoid arthritis, skin, stimulant, syphilis, tonic, venereal disease
Europe	Alterative, arthritis, diaphoretic, diuretic, inflammation, kidney, psoriasis, rheumatism, skin, syphilis, tonic, urinary
India	Aphrodisiac, spasm
Latin America	Aches, alterative, aphrodisiac, arthritis, cold, diaphoretic, digestive, fever, gout, impotence, pain, psoriasis, rheumatism, skin, stimulant, syphilis, tonic, venereal disease, weakness
Malaya	Aphrodisiac, rheumatism
Mexico	Arthritis, burn, cancer, depurative, diaphoretic, digestive, diuretic, dyspepsia, eczema, fever, gonorrhea, inflammation, leprosy, nephritis, rash, rheumatism, scrofula, skin, stimulant, sudorific, syphilis, tonic, venereal disease
Turkey	Alterative, aphrodisiac, blood, depurative, diuretic, emetic, scrofula, sudorific, tonic
United States	Acne, alterative, anabolic, arthritis, bladder, burns, cancer, convalescence, cough, depurative, diabetes, diaphoretic, digestive, diuretic, eczema, ergogenic, expectorant, eye, fever, gonorrhea, gout, hepatoprotective, herpes, hives, hypertension, impotence, infertility, inflammation, kidney, laxative, leukorrhea, liver, pectoral, pleurisy, PMS, pruritus, psoriasis, rheumatism, scrofula, shingles, skin, STDs, stomach, stress, syphilis, tonic, tuberculosis, ulcer, ulcerative colitis, urinary, warts, wounds
Elsewhere	Abscess, alterative, anabolic, aperitif, aphrodisiac, arthritis, asthma, boil, burn, cancer, carminative, cold, conjunctivitis, cystitis, debility, demulcent, dermatosis, depurative, diaphoretic, diarrhea, digestive, diuretic, dropsy, dysentery, dyspepsia, dysentery, eczema, epilepsy, emetic, enteritis, fever, gonorrhea, gout, herpes, impotence, inflammation, kidney, leprosy, liver, lung, lymphadenopathy, malaria, malignancy, menorrhagia, pruritis, psoriasis, rash, refrigerant, rheumatism, rheumatoid arthritis, scrofula, skin, sterility, stimulant, stomach, sudorific, syphilis, tonic, toothache, tumor, urogenital, venereal disease, wound

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

Ethnomedical Information on Sarsaparilla (*Smilax officinalis*)

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Root Brazil	Used for affections of the skin: eczema, urticaria, wounds, ulcers and pimples. Used for affections of the urinary system, dysuria, calculi, oliguria, anuria, rheumatism, arthritis, gout, venereal disease, anorexia, digestive disturbances, hypotonia and muscular hypotrophy.	Decoction Oral	Human Adult	ZZ1072
Root Brazil	Used for syphilis, rheumatism, gout and affections of the skin.	Not Stated	Human Adult	ZZ1013
Root China	Used for boils and abscesses, rheumatoid arthritis, urinary tract infection, enteritis, diarrhea and as an antidote for mercurial poisoning. Considered a tonic, to have cooling properties, to remove excess moisture, promote diuresis, and to be an antimalarial.	Decoction Oral & External	Human Adult	BN1002
Root China	Used for rheumatism, arthritis, skin disease, venereal disease, fevers, digestive disorders and as a general tonic.	Not Stated	Human Adult	ZZ1063
Root + Rhizome China	Used for rheumatism, arthritis, sores, skin problems, mercury poisoning, syphilis and acute bacterial dysentery.	Not Stated	Human Adult	ZZ1060
Root England	Used as an alterative tonic, blood purifier, diuretic and diaphoretic for venereal disease, to restore appetite, for skin diseases and chronic abscesses.	Decoction Oral	Human Adult	BN1002
Root England	Used for contagious diseases and to treat syphilis.	Not Stated	Human Adult	ZZ1066
Root + Rhizome England	Used as an antirheumatic, anti-itch, anti-inflammatory, diaphoretic, diuretic, antiseptic, blood tonic, metabolic stimulant and immune enhancer. Enhances muscle tone and used by sports people to improve performance. Used for pre-menstrual tension, impotence, sexual debility, rheumatism, gout, vaginal itching, anal itching, psoriasis, eczema, leprosy, bacterial dysentery, mercurial poisoning and cancer.	Decoction Oral	Human Adult	ZZ1011
Root + Rhizome England	Used as an antirheumatic, antiseptic, antipruritic for psoriasis, cutaneous conditions, chronic rheumatism, rheumatoid arthritis and leprosy.	Decoction Oral	Human Adult	BN1007
Root Europe	Used for skin diseases, psoriasis, rheumatism, kidney disease and as a diuretic and diaphoretic.	Not Stated	Human Adult	ZZ1060
Root Europe	Used as an anti-inflammatory for rheumatism, arthritis and a treatment for urinary tract disorders; a rejuvenating tonic.	Fluid Ext Oral	Human Adult	ZZ1061

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Root Europe	Used for syphilis and rheumatic conditions. Considered a blood purifier.	Not Stated	Human Adult	BN1006
Root Germany	Used for skin diseases, psoriasis, rheumatic complaints, kidney diseases, as a diuretic and diaphoretic.	Not Stated	Human Adult	BN1005
Root Germany	Used for skin diseases, psoriasis, rheumatic complaints, kidney diseases and as a diuretic and diaphoretic.	Not Stated	Human Adult	BN1009
Root Honduras	Used for rheumatism, arthritis, skin disease, venereal disease, fevers, digestive disorders and as a general tonic.	Not Stated	Human Adult	ZZ1063
Root Honduras	Used for syphilis, rheumatism, pain of the joints and head, and against the cold.	Decoction Oral	Human Adult	BN1002
Root + Rhizome Honduras	Used for gonorrhoea, skin diseases, rheumatism, fevers and digestive disorders.	Decoction Oral	Human Adult	ZZ1060
Root Jamaica	Used for syphilis, rheumatism and passive dropsy as it is considered to be a tonic, alterative, diaphoretic and diuretic.	Fluid Ext Oral	Human Adult	ZZ1052
Root Latin America	Used as an alterative, diaphoretic and tonic to treat sexual impotence, rheumatism, skin ailments, physical weakness, aches and pains in the joints, cold diseases, syphilis, gout, digestive disorders and psoriasis.	Decoction Oral	Human Adult	ZZ1059
Root Mexico	Used for rheumatism, arthritis, skin disease, venereal disease, fevers, digestive disorders and as a general tonic.	Not Stated	Human Adult	ZZ1063
Root Mexico	Used as a diaphoretic and diuretic.	Not Stated	Human Adult	ZZ1052
Root Mexico	Used for arthritis, cancer, dyspepsia, eczema, fever, gonorrhoea, leprosy, nephrosis, rash, rheumatism, scrofula, skin ailments, syphilis and wounds. Considered to be depurative, diaphoretic, sudorific and tonic.	Not Stated	Human Adult	ZZ1049
Rhizome Mexico	Used for gonorrhoea, skin diseases, rheumatism, fevers and digestive disorders.	Decoction Oral	Human Adult	ZZ1060
Bark New Guinea	Used for toothache.	Maceration External	Human Adult	ZZ1049
Root Peru	Used for pain of the joints and head, and against the cold.	Decoction Oral	Human Adult	BN1002
Root Philippines	Used for dysentery.	Not Stated	Human Adult	ZZ1052
Root South America	Used to purify the blood, stimulant, aphrodisiac and tonic for syphilis, gout, rheumatism and skin conditions.	Decoction Oral	Human Adult	BN1003

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Leaf + Root USA	Used as an antilethargic and ergogenic aid.	Leaf + Root Oral	Human Adult	M26697
Root USA	Used for skin diseases, psoriasis, rheumatic complaints, kidney diseases and as a diuretic and diaphoretic. In homeopathy it is used for skin rashes, rheumatism and inflammation of the urinary organs.	Decoction or Homeopathic Oral	Human Adult	ZZ1102
Root USA	Used for gout, arthritis, fever, digestive disorders, skin disease and cancer. Considered a blood purifier and tonic and is used for psoriasis, eczema, arthritis and ulcerative colitis; said to increase muscle mass. Also noted as a sexual rejuvenator.	Fluid Ext Oral	Human Adult	ZZ1010
Root USA	Used for venereal diseases such as syphilis and gonorrhea.	Infusion External or Douche	Human Adult	ZZ1053
Root USA	Used as a tonic, ergogenic, male rejuvenator and anti-inflammatory. Used to treat sexually transmitted diseases, syphilis, arthritis, gout, cancer, acne and skin diseases.	Not Stated	Human Adult	ZZ1062
Root USA	Used for syphilis, as an alterative and blood purifier, for convalescence, as a diuretic, diaphoretic, expectorant and laxative. Used by athletes and body builders as an ergogenic aid.	Not Stated	Human Adult	BN1001
Root USA	Used as a general tonic, to make one young, for urinary disturbances, rheumatism, stomach troubles, kidney troubles and as a gynecological aid.	Decoction Oral	Human Adult	BN1002
Root USA	Used to increase flesh and muscular power through improving digestion and assimilation.	Decoction Oral	Human Adult	BN1004
Root USA	Used for syphilis, chronic rheumatism, scrofulous disease, tuberculosis, skin diseases, alterative, to stimulate appetite and digestion and to increase strength.	Decoction Oral	Human Adult	BN1002
Root USA	Used for syphilis, male sexual dysfunction, to promote urination and sweating, as a blood purifier, for fevers and to increase muscle mass.	Fluid Ext Oral	Human Adult	ZZ1061
Root USA	Used for rheumatism, arthritis, skin disease, venereal disease, fevers, digestive disorders and as a general tonic.	Not Stated	Human Adult	ZZ1063
Root USA	Used for coughs, hypertension, pleurisy, as a diuretic and alterative and as a general tonic. Used for wounds, sore eyes and burns.	Not Stated Oral Not Stated External	Human Adult	ZZ1063

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Root USA	Used for syphilis and rheumatism, as a performance-enhancing and body-building substitute for anabolic steroids for athletes. Considered to have hepatoprotective, diuretic and anti-inflammatory activity.	Not Stated	Human Adult	ZZ1060
Root USA	Used as an alterative, pectoral, diaphoretic and sudorific for pulmonary diseases. Used for ulcers, shingles, syphilis and wounds.	Fluid Ext Oral Decoction External	Human Adult	ZZ1052
Root USA	Used as a blood purifier for psoriasis, eczema, warts and skin infections. In homeopathy it is used for skin eruptions accompanied by intense itching.	ETOH Ext Oral Homeopathic Oral	Human Adult	ZZ1014
Root USA	Used to stimulate metabolism, enhance glandular balance, boost hormone production, cleanse the blood, increase metabolic rate and aid muscle building. It has been used to treat gout, rheumatism, kidney and bladder dysfunctions and skin conditions.	ETOH Ext Oral	Human Adult	ZZ1016
Root USA	Used for impotency, liver problems, stress, rheumatism, gout, venereal disease, syphilis, leucorrhea, herpes, blood impurities, epilepsy, frigidity, hives, impotence, infertility, premenstrual syndrome, nervous system disorders, fever, eczema, psoriasis, diabetes and stomach and kidney disorders. Regulates hormones, increases energy and protects against harmful radiation.	Not Stated	Human Adult	ZZ1046
Root USA	Used to increase circulation, clear toxins and stimulate metabolism.	Not Stated	Human Adult	ZZ1067
Root + Rhizome USA	Used as an alterative, antirheumatic, diuretic and diaphoretic for skin and rheumatic conditions, psoriasis and rheumatoid arthritis.	Decoction Oral	Human Adult	ZZ1056
Root + Rhizome USA	Used as a diuretic and sudorific for skin disorders and rheumatism.	Not Stated	Human Adult	ZZ1066
Root Worldwide	Used as a tonic and blood purifier for syphilis, gout, arthritis, fevers, digestive disorders, psoriasis, skin disease and cancer.	Decoction Oral	Human Adult	ZZ1064
Root Worldwide	Used for lung and stomach congestion, skin diseases, herpes, syphilis, psoriasis, arthritis, rheumatism, gout, nervous disorders, epilepsy, chronic liver disorders, colds, fevers, stomach and intestinal gas. Promotes circulation, clears toxins, balances the glandular system, stimulates metabolism and male sexual potency. Used for body builders, as a rejuvenator and anti-inflammatory.	Not Stated	Human Adult	ZZ1015
Root Worldwide	Used as a tonic and blood purifier for syphilis, gout, arthritis, fevers, digestive disorders, skin disease and cancer.	Not Stated	Human Adult	ZZ1064

Part / Location	Documented Ethnomedical Uses	Type Extract / Route	Used For	Ref #
Root Not Stated	Used for as an antirheumatic, antiseptic and antipruritic for psoriasis, cutaneous conditions, rheumatism, rheumatoid arthritis and leprosy.	Decoction Oral	Human Adult	BN1008
Not Stated	Used for cancer, dyspepsia, eczema, fever, gonorrhea, kidney, leprosy, rash, rheumatism, scrofula, skin, syphilis, wounds, dermatosis, abscess, arthritis, asthma, boil, cold, debility, diarrhea, enteritis, gout, malaria, menorrhagia, refrigerant, tumor, urogenital, venereal disease, cystitis, dysentery, lymphadenopathy, sore, malignancy, toothache, burn, conjunctivitis, inflammation, sterility and impotence.	Not Stated	Human Adult	ZZ1022
Not Stated	Considered a depurative, sudorific, tonic, aphrodisiac, alterative, carminative, diaphoretic, demulcent, diuretic, stimulant and emetic.	Not Stated	Human Adult	ZZ1022

Presence of Compounds in Sarsaparilla (*Smilax officinalis*)

Compound	Chemical type	Plant Part	Plant Origin	Quantity	Ref #
Alcohol, cetyl		Root	Not Stated	Not Stated	ZZ1095
Astilbin	Flavone	Root Rhizome Rhizome	China China China	Not Stated Not Stated Not Stated	BN1023 BN1025 BN1026
Astilbin, iso	Flavone	Not Stated Rhizome	China China	Not Stated Not Stated	BN1026 BN1027
Calcium	Inorganic	Root	Not Stated	2,980 ppm	ZZ1095
Chromium	Inorganic	Root	Not Stated	17 ppm	ZZ1095
Cobalt	Inorganic	Root	Not Stated	152 ppm	ZZ1095
Diosgenin	Steroid	Rhizome Not Stated	China Not Stated	Not Stated Not Stated	BN1030 BN1007
Engeletin	Flavone	Rhizome	China	Not Stated	BN1025
Engetitin, iso	Flavone	Rhizome	China	Not Stated	BN1027
Essential Oil		Root	Not Stated	300 ppm	ZZ1095
Eucryphin		Rhizome	Japan	Not Stated	BN1033
Eurryphin	Flavone	Rhizome	China	Not Stated	BN1025
Ferulic acid		Rhizome	Vietnam	Not Stated	BN1028
Glucose		Root	Not Stated	Not Stated	ZZ1095
Iron	Inorganic	Root	Not Stated	905 ppm	ZZ1095
Isoflavone, 7,6'-dihydroxy 3'-methoxy	Flavone	Root	China	Not Stated	BN1023
Kaempferol		Leaf	Vietnam	Not Stated	BN1028
Magnesium	Inorganic	Root	Not Stated	1,670 ppm	ZZ1095
Manganese	Inorganic	Root	Not Stated	57 ppm	ZZ1095

Compound	Chemical type	Plant Part	Plant Origin	Quantity	Ref #
Parigenin, acetyl		Root	Honduras	Not Stated	BN1015
Parigenin		Root	Not Stated	Not Stated	ZZ1095
Parillin		Root	Not Stated	Not Stated	ZZ1095
Phosphorus	Inorganic	Root	Not Stated	1,770 ppm	ZZ1095
Pollinastanol	Steroid	Root	Not Stated	Not Stated	ZZ1095
Potassium	Inorganic	Root	Not Stated	9,530 ppm	ZZ1095
Quercetin	Flavonoid	Leaf	Vietnam	Not Stated	BN1028
Quercetin, dihydro	Flavone	Rhizome	China	Not Stated	BN1025
Resin		Root	Not Stated	25,000 ppm	ZZ1095
Resveratrol		Rhizome	China	Not Stated	BN1025
Rhamnose		Root	Honduras	Not Stated	BN1015
Saponin		Root	Not Stated	5,000-20,000 ppm	ZZ1095
Sarasaponin	Saponin	Root	Not Stated	Not Stated	ZZ1095
Sarsaparilloside	Saponin	Root	Not Stated	Not Stated	ZZ1095
Sarsaponin	Saponin	Root	Not Stated	Not Stated	ZZ1095
Sarsasapogenin	Sapogenin	Root	Not Stated	Not Stated	ZZ1095
Sarsasapogenin-3-o-beta-d-glucopyranosyl(1-4)-[alpha-l-arabinopyranosyl(1-6)]-beta-d-glucopyranoside	Sapogenin	Rhizome	Brazil	00.008%	H18375
Selenium	Inorganic	Root	Not Stated	Not Stated	ZZ1095
Shikimic acid		Rhizome	Vietnam	Not Stated	BN1028
Shikimic acid, O-(3)-caffeoyl		Rhizome	Vietnam	Not Stated	BN1028

Compound	Chemical type	Plant Part	Plant Origin	Quantity	Ref #
Shikimic acid, 5-O-caffeoyl		Rhizome	China	Not Stated	ZZ1025
Silicon	Inorganic	Root	Not Stated	88 ppm	ZZ1095
Sitosterol, beta	Sterol	Root	Not Stated	Not Stated	ZZ1095
Sitosterol, d-glucoside	Sterol	Root	Not Stated	Not Stated	ZZ1095
Sitosterol, epsilon	Sterol	Root	Not Stated	Not Stated	ZZ1095
Smilagenin	Sapogenin	Root	Not Stated	Not Stated	ZZ1095
Smilasaponin	Saponin	Root	Not Stated	Not Stated	ZZ1095
Smilax saponin A	Saponin	Rhizome	China	Not Stated	BN1030
Smilax saponin B	Saponin	Rhizome	China	Not Stated	BN1030
Smilax saponin C	Saponin	Rhizome	China	Not Stated	BN1030
Smiglaside A	Phenylpropanoid glycoside	Rhizome	China	Not Stated	BN1024
Smiglaside B	Phenylpropanoid glycoside	Rhizome	China	Not Stated	BN1024
Smiglaside C	Phenylpropanoid glycoside	Rhizome	China	Not Stated	BN1024
Smiglaside D	Phenylpropanoid glycoside	Rhizome	China	Not Stated	BN1024
Smiglaside E	Phenylpropanoid glycoside	Rhizome	China	Not Stated	BN1024
Smitilbin	Flavone	Rhizome	China	Not Stated	BN1025
Spirotstan-6-beta-ol,25(s):3-o-beta-d-glycopyranosyl(1-4)-o-[alpha-l-arabinopyranosyl(1-6)-beta-d-glucopyranoside	Sapogenin	Rhizome	Brazil	00.0052%	H18375
Starch		Root	Not Stated	520,000 ppm	ZZ1095
Stigmasterol		Root	Not Stated	Not Stated	ZZ1095
Taxifolin		Root	China	Not Stated	BN1023

Compound	Chemical type	Plant Part	Plant Origin	Quantity	Ref #
Tigogenin, neo: 3-o-beta-d-glucopyranosyl(1-4)-o-[alpha-l-arabinopyranosyl(1-6)-beta-d-glucopyranoside]	Sapogenin	Rhizome	Brazil	00.0076%	H18375
Titogenin		Not Stated	Not Stated	Not Stated	BN1007
Vitamin C	Inorganic	Bark	Mexico	Not Stated	BN1029
Zinc	Inorganic	Root	Not Stated	26 ppm	ZZ1095

Biological Activities for Extracts of Sarsaparilla (*Smilax officinalis*)

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Not Stated	Hemolytic Activity	Not Stated	In vitro	Not Stated	Inactive	No effect on RBC surface tension, nor any hemolysis seen.	BN1014
Root Not Stated	Dermatogenic Effect	MEOH Ext	Oral Human Adult	30 g	Active	Favorable effect in lepers.	BN1013
Root Not Stated	Dermatogenic Effect	Infusion	Not Stated	Not Stated	Active	Favorable effect in psoriasis and eczema.	BN1011
Root Japan	Dermatogenic Effect	H2O Ext into Fine Granules	Oral Human Adult	5.4 g	Active	Erythroderma psoriaticum - diffuse red and silver-white scales over the entire body. Scales disappeared and redness subsided after 2 weeks. Gradual remission of lesions at 1 month.	BN1035
Root Japan	Dermatogenic Effect	H2O Ext into Fine Granules	Oral Human Adult	5.4 g	Active	Normalized abnormal keratinization in 1 month in patient with palmoplantar keratosis.	BN1035
Not Stated	Dermatogenic Effect	Not Stated	Human Adult	Not Stated	Active	Used as an adjuvant for the treatment of leprosy.	BN1044
Root Japan	Antipsoriatic Activity	H2O Ext into Fine Granules	Oral Human Adult	3.6 g	Active	Remission of silver-white scales on elbow and knee and decreased pruritis after 1 month of treatment.	BN1035
Root Japan	Antipsoriatic Activity	H2O Ext into Fine Granules	Oral Human Child	3.6 g	Active	9 year old child with pustular psoriasis, severe desquamation and pruritis on the palms and soles had gradual remission over 2 months, which remained after treatment was discontinued.	BN1035
Root Japan	Antieczema Activity	ETOH Ext in hydrophilic cream	Topical Human Child	2 ml extract to 140 g cream	Active	Cleared atopic dermatitis lesions.	BN1035
Root Japan	Antieczema Activity	Decoction	Oral Human Adult	60 ml	Active	Atopic dermatitis improved.	BN1035
Root Japan	Antieczema Activity	H2O Ext into Fine Granules	Oral Human Child	3.6 g	Active	Non-responsive steroidal dry skin and eczema over the face disappeared after 1.5 months of treatment with no side effects.	BN1035

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Root Not Stated	Renal Effect	Not Stated	Oral Human Adult	2.4 g	Active Inactive Inactive	Fall in serum non-protein N seen in 8-14 days in both normal and nephrotic patients, probably due to kidney stimulation and increased urinary excretion. With the fall in non-protein N, symptoms of early uremia (headache, anorexia) are relieved. No diuresis. No inhibition of protein metabolism.	BN1012
Not Stated	Uric Acid Excretion	Not Stated	Human Adult	Not Stated	Active	In chronic nephritis a sarsaparilla preparation increased urinary excretion of uric acid, with a fall of blood uric acid concentration of 30%.	BN1010
Not Stated Germany	Diuretic Activity	Not Stated	Human Adult	Not Stated	Active		BN1043
Rhizome China	Anti-inflammatory Activity	H2O Ext	Rat	400 & 800 mg/kg	Active Active Active	Inhibited the swelling of the footpad in adjuvant arthritis. Reduced LPS-induced production of IL-1, TNF and NO by peritoneal macrophages. Increased T-lymphocyte proliferation and IL-2 production by splenocytes.	BN1016
Rhizome China	Anti-inflammatory Activity	H2O Ext	Rat	Not Stated	Active	Inhibited primary inflammation of adjuvant arthritis.	BN1016
Root Saudi Arabia	Anti-inflammatory Activity	ETOH (95%) Ext	Oral Rat	500 mg/kg	Active Active	vs. carrageenan-induced acute inflammation. vs. cotton pellet-induced exudation.	BN1021
Rhizome China	Immunomodulatory Activity	H2O Ext	Rat	400 & 800 mg/kg	Active Active	Reduced picryl chloride-induced and chyclophosphamide-induced delayed-type hypersensitivity. Normalized CD4/CD8 ratios.	BN1016
Root Japan	Analgesic Activity	Decoction	Oral Human Adult	Not Stated	Active		BN1035
Root + Rhizome USA	Antirheumatic Activity	H2O Ext	Oral Human Adult	100 mg/kg	Active	In rheumatoid arthritis (RA) patients on no medication a combination of plants, including smilax, decreased the proinflammatory mediators, ESR levels and provided relief of RA pain and swellings.	BN1032

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Root Japan	Antiasthmatic Activity	Decoction	Oral Human Child	100 ml	Active	Reduced frequency of coughing and emesis in a 7 yr old boy with asthmatic bronchitis. During 1 year after discontinuation the cough has not reoccurred.	BN1035
Root Japan	Antiasthmatic Activity	Decoction	Oral Human Adult	60 ml	Active	Bronchial asthma ceased after 2 weeks. Patient was able to stop antiasthmatic and antiallergic medications.	BN1035
Root Japan	Antiasthmatic Activity	Infusion	Oral Human Adult	480 ml	Active	No asthmatic attack during treatment or after discontinuation of the 4 week treatment.	BN1035
Root Japan	Antiasthmatic Activity	Decoction	Oral Human Adult	60 ml	Active	In 10 patients bronchial asthma markedly improved with no side-effects. A reduction in serum IgE levels was seen during treatment and persisted after treatment was discontinued.	BN1035
Root Japan	Antiallergic Activity	Decoction	Oral Human Adult	60 ml	Active		BN1035
Root China	Antioxidant Activity	MEOH Ext Ethyl acetate Ext BuOH Ext H2O Ext MEOH Ext	Not Stated Not Stated Not Stated Not Stated Cell Culture	IC50=7.4 mcg/ml Not Stated Not Stated Not Stated 4-100 mcg/ml	Active Active Active Active Active	DPPH free radical scavenging activity seen. Increased production of superoxide dismutase, catalase and glutathione peroxidase seen.	BN1017
Rhizome Japan	Hypoglycemic Activity	MEOH Ext	IP Mice	100 mg/kg	Active Active Inactive Active Active	Hypoglycemic effect in normal mice. Hypoglycemic effect in KK-Ay mice (NIDDM model). vs. streptozotocin-induced diabetic mice (IDDM model). vs. epinephrine-induced hyperglycemia. Increased insulin sensitivity.	BN1019
Not Stated China	Antimutagenic Activity	Decoction	In vitro	Not Stated	Active	Inhibited the mutagenicity of benzo(a)pyrene.	BN1022
Root Japan	Carcinomatous Pain Relief	Decoction	Oral Human Adult	60 ml	Active	Pain associated with cancer of the stomach disappeared in 2 days. No relapse of pain after 6 months.	BN1035
Not Stated	Hepatoprotective Activity	Not Stated	Rat	Not Stated	Active		BN1042

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Not Stated Germany	Digestive Activity	Not Stated	Human Adult	Not Stated	Active	Improved appetite and digestion.	BN1043
Rhizome China	Antisymphilitic Activity	Not Stated	Not Stated	Not Stated	Active	Negative blood test result seen in 90% of acute cases and 50% of chronic cases.	ZZ1060
Root Not Stated	Antibacterial Activity	ETOH (95%) Ext ETOH (95%) Ext H2O Ext	Agar Plate	Not Stated	Inactive	<i>Escherichia coli</i> <i>Staphylococcus aureus</i> <i>Escherichia coli</i>	A15179
Root Not Stated	Antimycobacterial Activity	ETOH (95%) Ext H2O Ext	Agar Plate	Not Stated	Inactive Inactive	<i>Mycobacterium tuberculosis</i> <i>Mycobacterium tuberculosis</i>	A15179 A15179
Root Not Stated	Antimycobacterial Activity	Fluid Extract	Agar Plate	MIC=25.0 Mg/ml	Weak Activity	<i>Mycobacterium tuberculosis</i>	A03634
Not Stated Guatemala	Antifungal Activity	H2O Ext	In vitro	Not Stated	Active	Fungicidal and fungistatic activity seen.	BN1020
Not Stated Guatemala	Antifungal Activity	H2O Ext	In vitro	Not Stated	Active	<i>E. floccosum</i> <i>T. rubrum</i> <i>T. mentagrophytes</i> <i>M. canis</i> <i>M. gypseum</i>	BN1020

Biological Activities for Compounds of Sarsaparilla (*Smilax officinalis*)

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Steroidal saponins	Hemolytic Activity	In vitro	Not Stated	Active		BN1018
Sarsaponin	Antipsoriatic Activity	Human Adult	Not Stated	Active	In 92 patients, endotoxin-binding sarsaponin improved psoriasis in 62% and completely cleared psoriatic lesions in 18%. More effective in chronic, large plaque psoriasis.	BN1031
Flavonoids + Chromones	Immunosuppressive Activity	Mice	Not Stated	Active	Inhibited activated immune cells; mainly T cells.	BN1033
Diosgenin	Inflammatory Activity	Cell Culture	Not Stated	Active	Increased prostaglandin E2 synthesis.	BN1040
Diosgenin	Anti-inflammatory Activity	Injection Rat	>80 mg/kg	Active	Attenuated subacute intestinal inflammation and normalized bile secretion in indomethacin-induced intestinal inflammation model.	BN1041
Smitilbin + engeletin + astilbin + eurryphin + resveratrol	Hepatoprotective Activity	Cell Culture	Not Stated	Active Inactive	Pre-treatment with compounds blocked non-parenchymal cell ALT release following immunological liver injury to hepatocytes. CCl4-induced ALT release from hepatocytes.	BN1025
Flavonoids + Chromones	Hepatoprotective Activity	Mice	Not Stated	Active Inactive	Maintained viability of hepatocytes and non-parenchymal (NPC) liver cells during induced immunological liver injury (DTH reaction) and inhibited ALT & AST release. Induced apoptosis against non-adherent NPC cells (T lymphocyte populations are the main components). Apoptosis of hepatocytes and NPC-adherent cells.	BN1033
Astilbin	Hepatoprotective Activity	Oral Mice	50 or 100 mg/kg	Active Inactive	No elevation in ALT and AST seen compared to control group. Did not prevent hepatocyte damage. vs. CCl4 administration.	BN1033
Resveratrol	Antioxidant Activity	Not Stated	Not Stated	Active		BN1025
Sarsasapogenin	Antioxidant Activity	Cell Culture	Not Stated	Active	Suppressed arachidonic acid-, fMLP- and PMA-induced superoxide generation.	BN1036

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Diosgenin	Antioxidant Activity	Cell Culture	Not Stated	Active	Increased oxidative stress is seen in brain and CSF of HIV-infected patients with an accumulation of toxic substances in the CSF which can induce dementia. Diosgenin blocks CSF-induced toxicity.	BN1039
Sarsasapogenin	Cholinergic Activity	Not Stated	Not Stated	Active	Upregulates M.sub.1 cholinergic receptors and down-regulates beta-adrenergic receptors which may be pathologically raised in Alzheimer's disease & senile dementia of the Alzheimer's type.	BN1034
Smilagenin	Muscarinic Receptor Upregulation	Not Stated	Not Stated	Active	Increased the number of M2 receptors in the brain.	BN1034
Smilagenin	Muscarinic Receptor Upregulation	Cell Culture	10(-5) M 1-10 .mu.M	Active Active	Increased the number of muscarinic receptors expressed on the surface of chinese hamster ovary cells. Effect not antagnoized by tamoxifen. Increased muscarinic receptor density.	BN1034
Smilagenin	Muscarinic Receptor Upregulation	Cell Culture	Not Stated	Active	Beta-amyloid reduced the number of muscarinic receptors on PC12 cells; smilagenin ameliorated this effect.	BN1034
Smilagenin	Muscarinic Receptor Upregulation	Cell Culture	10(-6)M	Active	Increased the number of muscarinic receptors expressed on neonatal cardiac muscle after 10 days in vitro.	BN1034
Sarsasapogenin	Muscarinic Receptor Upregulation	Cell Culture	10(-5)M	Active	Increased the number of muscarinic receptors expressed on neonatal cardiac muscle after 10 days in vitro.	BN1034
Smilagenin	Muscarinic Receptor Upregulation	Oral Aged Rats	18 mg/kg	Active	Reversed the decline in muscarinic receptor number in the brain, restoring levels to those observed in young control animals.	BN1034
Smilagenin	Steroid Receptor Activity	Not Stated	Not Stated	Inactive	No effect on estrogen, progesterone, glucocorticoid and testosterone receptors.	BN1034
Smilagenin	Cognitive Enhancement	Oral Rat	18 mg/kg	Active	Reversed the decline in cognitive function in aged rats; enhanced learning and memory performance in the Y-maze tests, with results comparable to those of young animals.	BN1034
Diosgenin	Hypocholesterolemic Activity	Oral Dog	Not Stated	Active	Hypocholesterolemic effect in diabetic dogs.	BN1037

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Smilagenin	Hypocholesterolemic Activity	Oral Dog	Not Stated	Active	Hypocholesterolemic effect in diabetic dogs.	BN1037
Diosgenin	Antiproliferative Activity	Cell Culture	Not Stated	Active	Osteosarcoma cells. Caused cell cycle arrest associated with apoptosis and enhanced activation of p53.	BN1038
Diosgenin	Antiproliferative Activity	Cell Culture	Not Stated	Active	Able to induce differentiation of human erythroleukemia cells.	BN1040
Diosgenin	Antiproliferative Activity	Cell Culture	Not Stated	Active	Human osteosarcoma 1547 cell line.	BN1040

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BN1019	HYPOGLYCEMIC EFFECT OF THE RHIZOMES OF SMILAX GLABRA IN NORMAL AND DIABETIC MICE. FUKUNAGA, T: MIURA, T: FURUTA, K: KATO, A: BIOL PHARM BULL 20 1: 44-6 (1997) (MAYADO PHARMACEUTICAL CO, LTD, TAMATSU-CHO, NISHI-KU, KOBE, JAPAN)
BN1020	PLANTS USED IN GUATEMALA FOR THE TREATMENT OF DERMATOPHYTIC INFECTIONS. 1. SCREENING FOR ANTIMYCOCTIC ACTIVITY OF 44 PLANT EXTRACTS. CACERES, A: LOPEZ, BR: GIRON, MA: LOGEMANN, H: J ETHNOPHARMACOL 31 3: 263-76 (1991) (FACULTY OF CHEMICAL SCIENCES AND PHARMACY, UNIVERSITY OF SAN CARLOS CIUDAD UNIVERSITARIA, GUATEMALA)
BN1021	EXPERIMENTAL STUDIES ON ANTIRHEUMATIC CRUDE DRUGS USED IN SAUDI TRADITIONAL MEDICINE. AGEEL, AM: MOSSA, JS: AL-YAHYA, MA: AL-SAID, MS: TARIQ, M: DRUGS EXP CLIN RES 15 8: 369-72 (1989) (COLLEGE OF PHARMACY, KING SAUD UNIVERSITY, RIYADH, SAUDI ARABIA)
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