

CHANCA PIEDRA POWDER

Description: Chanca piedra means "stone breaker" throughout South America and the Amazon.* Raintree's chanca piedra has been sustainably wild-harvested in the Amazon Rainforest (without any pesticides or fertilizers). For more complete information on this unique rainforest plant, please see the Raintree Nutrition internet website and the online Tropical Plant Database.

Traditional Uses:* for kidney stones and gallstones (active stones and as a preventative); to tone, balance, strengthen, detoxify and protect the kidneys and to reduce uric acid and increase urination; to tone, balance, strengthen, detoxify, and protect the liver (and to balance liver enzymes); for hypertension and high cholesterol levels

Ingredients: 100% pure chanca piedra whole herb (*Phyllanthus niruri*). No binders, fillers or additives are used.

This plant is non-irradiated and non-fumigated and has grown naturally in the Amazon without any pesticides or fertilizers.

Suggested Use: This plant is best prepared as an infusion (tea): Use one teaspoon of powder for each cup of water. Pour boiling water over herb in cup and allow to steep 10 minutes. Strain tea (or allow settled powder to remain in the bottom of cup) and drink warm. It is traditionally taken in 1 cup dosages, 2-3 times daily.

Contraindications: Not to be used during pregnancy or while breast-feeding.

Drug Interactions: None reported; however based on animals studies, it might potentiate antihypertensive, diabetic drugs.

Other Observations:

- Chanca piedra has been documented to reduce blood pressure in animal studies. Individuals with low blood pressure should be monitored for this possible effect.
- Chanca piedra has been documented with female antifertility effects in one mouse study. Although not proven in humans, the use of the plant is probably contraindicated in women seeking pregnancy.
- This plant has demonstrated hypoglycemic activity. Individuals with hypoglycemia should be monitored more closely for this possible effect.

Clinical Documentation and Research:* Available third-party documentation and clinical research on chanca

piedra can be found at the Raintree website or on Medline/PubMed. A partial listing of the published research on chanca piedra is shown below:

Actions on Kidney Stones & Uric Acid:

Murugaiyah, V., et al. "Mechanisms of antihyperuricemic effect of *Phyllanthus niruri* and its lignan constituents."

J. Ethnopharmacol. 2009 Jul; 124(2): 233-9.

Schuler, T., et al. "Medical expulsive therapy as an adjunct to improve shockwave lithotripsy outcomes: a

systematic review and meta-analysis." *J. Endourol.* 2009; 23(3): 387-93.

Kieley, S., et al. "Ayurvedic medicine and renal calculi." *J. Endourol.* 2008; 22(8): 1613-6.

Wright, C., et al. "Herbal medicines as diuretics: a review of the scientific evidence." *J. Ethnopharmacol.* 2007 Oct; 114(1) :1-31.

Murugaiyah V, et al. "Antihyperuricemic lignans from the leaves of *Phyllanthus niruri*." *Planta Med.* 2006 Nov; 72(14): 1262-7.

Micali, S., et al. "Can *Phyllanthus niruri* affect the efficacy of extracorporeal shock wave lithotripsy for renal stones? A randomized, prospective, long-term study." *J. Urol.* 2006 Sep; 176(3): 1020-2.

Barros, M. E., et al. "Effect of extract of *Phyllanthus niruri* on crystal deposition in experimental urolithiasis." *Urol. Res.* 2006 Dec; 34(6): 351-7.

Nishiura, J. L., et al. "*Phyllanthus niruri* normalizes elevated urinary calcium levels in calcium stone forming (CSF) patients." *Urol. Res.* 2004 Oct; 32(5): 362-6.

Barros, M. E., et al. "Effects of an aqueous extract from *Phyllanthus niruri* on calcium oxalate crystallization in vitro." *Urol. Res.* 2003; 30(6): 374-9.

Freitas, A. M., et al. "The effect of *Phyllanthus niruri* on urinary inhibitors of calcium oxalate crystallization and other factors associated with renal stone formation." *B. J. U. Int.* 2002; 89(9): 829–34.

Campos, A. H., et al. "*Phyllanthus niruri* inhibits calcium oxalate endocytosis by renal tubular cells: its role in urolithiasis." *Nephron.* 1999; 81(4): 393–97.

Antispasmodic, Pain-Relieving, & Anti-inflammatory Actions:

Lai, C., et al. "Inhibition of *Helicobacter pylori*-induced inflammation in human gastric epithelial AGS cells by *Phyllanthus urinaria* extracts." *J. Ethnopharmacol.* 2008 Aug; 118(3): 522-6.

Dirjomuljono, M., et al. "Symptomatic treatment of acute tonsillo-pharyngitis patients with a combination of *Nigella sativa* and *Phyllanthus niruri* extract." *Int. J. Clin. Pharmacol. Ther.* 2008; 46(6): 295-306.

Fang, S., et al. "Anti-oxidant and inflammatory mediator's growth inhibitory effects of compounds isolated from *Phyllanthus urinaria*." *J. Ethnopharmacol.* 2008 Mar; 116(2): 333-40.

Kassuya, C. A., et al. "Antiinflammatory and antiallodynic actions of the lignan niranthin isolated from *Phyllanthus amarus*. Evidence for interaction with platelet activating factor receptor." *Eur. J. Pharmacol.* 2006 Sep; 546(1-3): 182-8.

Iizuka, T., et al. "Vasorelaxant effects of methyl brevifolincarboxylate from the leaves of *Phyllanthus niruri*." *Biol. Pharm. Bull.* 2006; 29(1): 177-9.

Kassuya, C. A., et al. "Anti-inflammatory properties of extracts, fractions and lignans isolated from *Phyllanthus amarus*." *Planta Med.* 2005; 71(8): 721-6.

Kiemer, A. K., et al. "*Phyllanthus amarus* has anti-inflammatory potential by inhibition of iNOS, COX-2, and cytokines via the NF-kappaB pathway." *J. Hepatol.* 2003; 38(3): 289-97.

Santos, A. R., et al. "Antinociceptive properties of extracts of new species of plants of the genus *Phyllanthus* (Euphorbiaceae)." *J. Ethnopharmacol.* 2000; 72(1/2): 229–38.

Miguel, O. G., et al. "Chemical and preliminary analgesic evaluation of geraniin and furosin

isolated from

Phyllanthus sellowianus." *Planta Med.* 1996; 62(2): 146–49.

Paulino, N., et al. "The relaxant effect of extract of *Phyllanthus urinaria* in the guinea-pig isolated trachea. Evidence for involvement of ATP-sensitive potassium channels." *J. Pharm. Pharmacol.* 1996; 48(11): 1158-63.

Santos, A. R., et al. "Analysis of the mechanisms underlying the antinociceptive effect of the extracts of plants from the genus *Phyllanthus*." *Gen. Pharmacol.* 1995; 26(7): 1499–1506.

Santos, A. R., et al. "Further studies on the antinociceptive action of the hydroalcoholic extracts from plants of the genus *Phyllanthus*." *J. Pharm. Pharmacol.* 1995; 47(1): 66–71.

Santos, A. R., et al. "Analgesic effects of callus culture extracts from selected species of *Phyllanthus* in mice." *J. Pharm. Pharmacol.* 1994; 46(9): 755–59.

Calixto, J. B., et al. "Antispasmodic effects of an alkaloid extracted from *Phyllanthus sellowianus*: a comparative study with papaverine." *Braz. J. Med. Biol. Res.* 1984; 17(3-4): 313-21

Antiviral Actions:

Cheng, H., et al. "Excoecarianin, isolated from *Phyllanthus urinaria* Linnaea, inhibits Herpes simplex virus type 2 infection through inactivation of viral particles." *Evid. Based Complement. Alternat. Med.* 2009 Oct 6.

Dirjomuljono, M., et al. "Symptomatic treatment of acute tonsillo-pharyngitis patients with a combination of *Nigella sativa* and *Phyllanthus niruri* extract." *Int. J. Clin. Pharmacol. Ther.* 2008; 46(6): 295-306.

Yang, C., et al. "The in vitro activity of geraniin and 1,3,4,6-tetra-O-galloyl-beta-D-glucose isolated from *Phyllanthus urinaria* against Herpes simplex virus type 1 and type 2 infection." *J. Ethnopharmacol.* 2007 Apr; 110(3): 555-8.

Bagalkotkar, G., et al. "Phytochemicals from *Phyllanthus niruri* Linn. and their pharmacological properties: a review." *J. Pharm. Pharmacol.* 2006 Dec; 58(12): 1559-70.

Naik, A., et al. "Effects of alkaloidal extract of *Phyllanthus niruri* on HIV replication." *Indian J. Med. Sci.* 2003 Sep; 57(9): 387-93.

Huang, R. L., et al. "Screening of 25 compounds isolated from *Phyllanthus* species for anti-human hepatitis B virus in vitro." *Phytother. Res.* 2003; 17(5): 449-53.

Liu, J., et al. "Genus *Phyllanthus* for chronic Hepatitis B virus infection: A systematic review." *Viral Hepat.* 2001; 8(5): 358–66.

Xin-Hua, W., et al. "A comparative study of *Phyllanthus amarus* compound and interferon in the treatment of chronic viral Hepatitis B." *Southeast Asian J. Trop. Med. Public Health* 2001; 32(1): 140–42.

Wang, M. X., et al. "Herbs of the genus *Phyllanthus* in the treatment of chronic Hepatitis B: Observation with three preparations from different geographic sites." *J. Lab. Clin. Med.* 1995; 126(4): 350–52.

Wang, M. X., et al. "Observations of the efficacy of *Phyllanthus* spp. in treating patients with chronic Hepatitis B." 1994; 19(12): 750–52.

Thyagarajan, S. P., et al. "Effect of *Phyllanthus amarus* on chronic carriers of Hepatitis B virus." *Lancet* 1988; 2(8614): 764–66.

Venkateswaran, P. S., et al. "Effects of an extract from *Phyllanthus niruri* on Hepatitis B and wood chuck hepatitis viruses: in vitro and in vivo studies." *Proc. Nat. Acad. Sci.* 1987; 84(1): 274–78.

Bhumyamalaki, et al. "Phyllanthus niruri and jaundice in children." *J. Natl. Integ. Med. Ass.* 1983; 25(8): 269–72.

Thyagarajan, S. P., et al. "In vitro inactivation of HBsAG by *Eclipta alba* (Hassk.) and *Phyllanthus niruri* (Linn.)." *Indian J. Med. Res.* 1982; 76s: 124–30.

Notka, F., et al. "Concerted inhibitory activities of *Phyllanthus amarus* on HIV replication in vitro and ex vivo." *Antiviral Res.* 2004 Nov; 64(2): 93-102.

Notka, F., et al. "Inhibition of wild-type human immunodeficiency virus and reverse transcriptase inhibitor-resistant variants by *Phyllanthus amarus*." *Antiviral Res.* 2003 Apr; 58(2): 175-186.

Qian-Cutrone, J. "Niruriside, a new HIV REV/RRE binding inhibitor from *Phyllanthus niruri*." *J. Nat. Prod.* 1996; 59(2): 196–99.

Ogata, T., et al. "HIV-1 reverse transcriptase inhibitor from *Phyllanthus niruri*." *AIDS Res. Hum. Retroviruses* 1992; 8(11): 1937–44.

Liver Protective & Detoxification Actions:

Chirdchupunseree, H., et al. "Protective activity of phyllanthin in ethanol-treated primary culture of rat hepatocytes." *J. Ethnopharmacol.* 2010 Jan 11.

Krithika, R., et al. "Ameliorative potential of *Phyllanthus amarus* against carbon tetrachloride-induced hepatotoxicity." *Acta Pol. Pharm.* 2009 Sep-Oct; 66(5): 579-83.

Guhu, G., et al. "Aqueous extract of *Phyllanthus amarus* inhibits chromium(VI)-induced toxicity in MDA-MB-435S cells." *Food Chem. Toxicol.* 2009 Oct 27.

Krithika, R., et al. "Mitigation of carbon tetrachloride-induced damage by *Phyllanthus amarus* in liver of mice." *Acta Pol. Pharm.* 2009 Jul-Aug; 66(4): 439-44.

Hau, D., et al. "Phyllanthus urinaria extract attenuates acetaminophen induced hepatotoxicity: involvement of cytochrome P450 CYP2E1." *Phytomedicine.* 2009 Aug; 16(8): 751-60.

Krithika, R., et al. "Isolation, characterization and antioxidative effect of phyllanthin against CCl4-induced toxicity in HepG2 cell line." *Chem. Biol. Interact.* 2009 Oct; 181(3): 351-8.

Yadav, N., et al. "Synergistic effect of silymarin and standardized extract of *Phyllanthus amarus* against CCl4-induced hepatotoxicity in *Rattus norvegicus*." *Phytomedicine.* 2008 Dec; 15(12): 1053-61.

Negi, A., et al. "Recent advances in plant hepatoprotectives: a chemical and biological profile of some important leads." *Med. Res. Rev.* 2008 Sep; 28(5): 746-72.

Appiah-Opong, R., et al. "Interactions between cytochromes P450, glutathione S-transferases and Ghanaian medicinal plants." *Food Chem. Toxicol.* 2008; 46(12): 3598-603.

Manjrekar, A., et al. "Effect of *Phyllanthus niruri* Linn. treatment on liver, kidney and testes in CCl4

induced
hepatotoxic rats." *Indian J. Exp Biol.* 2008 Jul; 46(7): 514-20.

Londhe, J., et al. "Antioxidant activity of some polyphenol constituents of the medicinal plant *Phyllanthus amarus* Linn." *Redox. Rep.* 2008; 13(5): 199-207.

Adeneye, A., et al. "Protective effect of the aqueous leaf and seed extract of *Phyllanthus amarus* on gentamicin and acetaminophen-induced nephrotoxic rats." *J. Ethnopharmacol.* 2008 Jul; 118(2): 318-23.

Faremi, T., et al. "Hepatoprotective potentials of *Phyllanthus amarus* against ethanol-induced oxidative stress in rats." *Food Chem. Toxicol.* 2008; 46(8): 2658-64.

Rai, V., et al. "Chromium-induced changes in ultramorphology and secondary metabolites of *Phyllanthus amarus* Schum & Thonn. - an hepatoprotective plant." *Environ. Monit. Assess.* 2008 Dec; 147(1-3): 307-15.

Shen, B., et al. "*Phyllanthus urinaria* ameliorates the severity of nutritional steatohepatitis both in vitro and in vivo." *Hepatology.* 2008 Feb; 47(2): 473-83.

Xu, M., et al. "Phenolic antioxidants from the whole plant of *Phyllanthus urinaria*." *Chem. Biodivers.* 2007 Sep; 4(9): 2246-52.

Jaleel, C., et al. "NaCl as a physiological modulator of proline metabolism and antioxidant potential in *Phyllanthus amarus*." *C. R. Biol.* 2007; 330(11): 806-13.

Sarkar, M., et al. "Hepatocytes are protected by herb *Phyllanthus niruri* protein isolate against thioacetamide toxicity." *Pathophysiology.* 2007 Oct; 14(2): 113-20.

Pramyothin, P., et al. "Hepatoprotective activity of *Phyllanthus amarus* Schum. et. Thonn. extract in ethanol treated rats: in vitro and in vivo studies." *J. Ethnopharmacol.* 2007 Nov; 114(2): 169-73.

Naaz, F., et al. "Hepatoprotective effect of ethanolic extract of *Phyllanthus amarus* Schum. et Thonn. on aflatoxin B1-induced liver damage in mice." *J. Ethnopharmacol.* 2007 Sep; 113(3): 503-9.

Stickel, F., et al. "Herbal medicine in the treatment of liver diseases." *Dig. Liver Dis.* 2007; 39(4): 293-304.

Bhattacharjee, R., et al. "Protein isolate from the herb *Phyllanthus niruri* modulates carbon tetrachloride-induced cytotoxicity in hepatocytes." *Toxicol. Mech Methods.* 2007; 17(1): 41-7.

Bhattacharjee, R., et al. "Protein isolate from the herb, *Phyllanthus niruri* L. (Euphorbiaceae), plays hepatoprotective role against carbon tetrachloride induced liver damage via its antioxidant properties." *Food Chem. Toxicol.* 2007; 45(5): 817-26.

Chatterjee, M., et al. "Hepatoprotective effect of aqueous extract of *Phyllanthus niruri* on nimesulide-induced oxidative stress in vivo." *Indian J. Biochem. Biophys.* 2006 Oct; 43(5): 299-305.

Bhattacharjee, R., et al. "The protein fraction of *Phyllanthus niruri* plays a protective role against acetaminophen induced hepatic disorder via its antioxidant properties." *Phytother. Res.* 2006; 20(7): 595-601.

Lee, C. Y., et al. "Hepatoprotective effect of *Phyllanthus* in Taiwan on acute liver damage induced by carbon tetrachloride." *Am. J. Chin. Med.* 2006; 34(3): 471-82.

Chatterjee, M., et al. "Herbal (*Phyllanthus niruri*) protein isolate protects liver from nimesulide induced oxidative

stress." *Pathophysiology*. 2006 May; 13(2): 95-102.

Khatoon, S., et al. "Comparative pharmacognostic studies of three *Phyllanthus* species." *J. Ethnopharmacol*. 2006 Mar; 104(1-2): 79-86.

Levy, C., et al. "Use of herbal supplements for chronic liver disease." *Clin. Gastroenterol Hepatol*. 2004; 2(11): 947-56.

Rajeshkumar, N. V., et al. "Phyllanthus amarus extract administration increases the life span of rats with hepatocellular carcinoma." *J. Ethnopharmacol*. 2000 Nov; 73(1-2): 215-19.

Padma, P., et al. "Protective effect of *Phyllanthus fraternus* against carbon tetrachloride-induced mitochondrial dysfunction." *Life Sci*. 1999; 64(25): 2411-17.

Jeena, K. J., et al. "Effect of *Emblca officinalis*, *Phyllanthus amarus* and *Picrorrhiza kurroa* on n-nitrosodimethylamine induced hepatocarcinogenesis." *Cancer Lett*. 1999; 136(1): 11-16.

Thabrew, M. R., et al. "Phytogenic agents in the therapy of liver disease." *Phytother. Res*. 1996; 10(6): 461-67.

Prakash, A., et al. "Comparative hepatoprotective activity of three *Phyllanthus* species, *P. urinaria*, *P. niruri* and *P. simplex*, on carbon tetrachloride induced liver injury in the rat." *Phytother. Res*. 1995; 9(8): 594-96.

Dhir, H., et al. "Protection afforded by aqueous extracts of *Phyllanthus* species against cytotoxicity induced by lead and aluminium salts." *Phytother. Res*. 1990; 4(5): 172-76.

Sreenivasa, R. Y. "Experimental production of liver damage and its protection with *Phyllanthus niruri* and *Capparis spinosa* (both ingredients of LIV52) in white albino rats." *Probe* 1985; 24(2): 117-19.

Syamasundar, K. V., et al. "Antihepatotoxic principles of *Phyllanthus niruri* herbs." *J. Ethnopharmacol*. 1985; 14(1): 41-4.

Anticancerous, Cellular Protective & Antioxidant Actions:

Huang, S., et al. "Ellagic acid, the active compound of *Phyllanthus urinaria*, exerts in vivo anti-angiogenic effect and inhibits MMP-2 activity." *Evid Based Complement Alternat Med*. 2010;

Harikumar, K., et al. "Inhibition of viral carcinogenesis by *Phyllanthus amarus*." *Integr. Cancer Ther*. 2009 Sep; 8(3): 254-60.

Guhu, G., et al. "Aqueous extract of *Phyllanthus amarus* inhibits chromium(VI)-induced toxicity in MDA-MB-435S cells." *Food Chem. Toxicol*. 2009 Oct 27.

Londhe, J., et al. "Radioprotective properties of polyphenols from *Phyllanthus amarus* Linn." *J. Radiat. Res*. (Tokyo). 2009 Jul; 50(4):303-9.

Harikumar, K., et al. "Phyllanthus amarus inhibits cell growth and induces apoptosis in Dalton's lymphoma ascites cells through activation of caspase-3 and downregulation of Bcl-2." *Integr. Cancer Ther*. 2009 Jun; 8(2): 190-4.

Chularojmontri, L., et al. "Cytoprotective role of *Phyllanthus urinaria* L. and glutathione-S transferase Pi in doxorubicin-induced toxicity in H9c2 cells." *J. Med. Assoc. Thai*. 2009 Jun; 92 Suppl 3: S43-51.

Huang, S., et al. "Phyllanthus urinaria increases apoptosis and reduces telomerase activity in human

nasopharyngeal carcinoma cells." *Forsch. Komplementmed.* 2009 Feb; 16(1): 34-40.

C Jagetia, G. "Radioprotective potential of plants and herbs against the effects of ionizing radiation." *J. Clin. Biochem. Nutr.* 2007 Mar; 40(2): 74-81.

Harikumar, K., et al. An extract of *Phyllanthus amarus* protects mouse chromosomes and intestine from radiation induced damages." *J. Radiat. Res.* 2007 Nov; 48(6): 469-76.

Iizuka, T, et al. "Inhibitory effects of methyl brevifolincarboxylate isolated from *Phyllanthus niruri* L. on platelet aggregation." *Biol. Pharm. Bull.* 2007; 30(2): 382-4.

Leite, D. F., et al. "The cytotoxic effect and the multidrug resistance reversing action of lignans from *Phyllanthus amarus*." *Planta Med.* 2006 Dec; 72(15): 1353-8.

Raphael, K. R., et al. "Inhibition of N-Methyl N'-nitro-N-nitrosoguanidine (MNNG) induced gastric carcinogenesis by *Phyllanthus amarus* extract." *Asian Pac. J. Cancer Prev.* 2006 Apr-Jun; 7(2): 299-302.

Hari Kumar, K. B., et al. "Inhibition of drug metabolizing enzymes (cytochrome P450) in vitro as well as in vivo by *Phyllanthus amarus* Schum & Thonn." *Biol. Pharm. Bull.* 2006; 29(7): 1310-3.

Mellinger, C. G., et al. "Chemical and biological properties of an arabinogalactan from *Phyllanthus niruri*." *J. Nat. Prod.* 2005; 68(10): 1479-83.

Kumar, K. B., et al. "Chemoprotective activity of an extract of *Phyllanthus amarus* against cyclophosphamide induced toxicity in mice." *Phytomedicine.* 2005; 12(6-7): 494-500.

Raphael, K. R., et al. "Inhibition of experimental gastric lesion and inflammation by *Phyllanthus amarus* extract." *J. Ethnopharmacol.* 2003; 87(2-3): 193-7.

Rajeshkumar, N. V. "Antitumour and anticarcinogenic activity of *Phyllanthus amarus* extract." *J. Ethnopharmacol.* 2002; 81(1): 17-22.

Sripanidkulchai, B., et al. "Antimutagenic and anticarcinogenic effects of *Phyllanthus amarus*." *Phytomedicine* 2002; 9(1): 26-32.

Devi, P. U. "Radioprotective effect of *Phyllanthus niruri* on mouse chromosomes." *Curr. Sci.* 2000; 78(10): 1245-47.

Souza, C. R., et al. "Compounds extracted from *Phyllanthus* and *Jatropha elliptica* inhibit the binding of [3H]glutamate and [3H]GMP-PNP in rat cerebral cortex membrane." *Neurochem. Res.* 2000; 25(2): 211-15.

Anti-Diabetic, Anti-Cholesterol & Hypotensive Actions:

Lin, S., et al. "Antioxidant, anti-semicarbazide-sensitive amine oxidase, and anti-hypertensive activities of geraniin isolated from *Phyllanthus urinaria*." *Food Chem. Toxicol.* 2008; 46(7): 2485-92.

Modak, M., et al. "Indian herbs and herbal drugs used for the treatment of diabetes." *J. Clin. Biochem. Nutr.* 2007 May; 40(3): 163-73.

Amaechina, F., et al. "Hypotensive effect of aqueous extract of the leaves of *Phyllanthus amarus* Schum and Thonn (Euphorbiaceae)." *Acta Pol. Pharm.* 2007 Nov-Dec; 64(6): 547-52.

Adeneye, A. A., et al. "Hypoglycemic and hypocholesterolemic activities of the aqueous leaf and

seed extract of
Phyllanthus amarus in mice." *Fitoterapia*. 2006 Dec; 77(7-8): 511-4.

Ali, H., et al. "alpha-Amylase inhibitory activity of some Malaysian plants used to treat diabetes; with particular reference to *Phyllanthus amarus*." *J. Ethnopharmacol.* 2006 Oct; 107(3): 449-55.

Raphael, K. R., et al. "Hypoglycemic effect of methanol extract of *Phyllanthus amarus* Schum & Thonn on alloxan induced diabetes mellitus in rats and its relation with antioxidant potential." *Indian J. Exp. Biol.* 2002; 40(8): 905-9.

Khanna, A. K., et al. "Lipid lowering activity of *Phyllanthus niruri* in hyperlipemic rats." *J. Ethnopharmacol.* 2002; 82(1): 19-22.

Srividya, N., et al. "Diuretic, hypotensive and hypoglycaemic effect of *Phyllanthus amarus*." *Indian J. Exp. Biol.* 1995; 33(11): 861-64.

Shimizu, M., et al. "Studies on aldose reductase inhibitors from natural products. II. Active components of a Paraguayan crude drug, 'paraparai mi,' *Phyllanthus niruri*." *Chem. Pharm. Bull. (Tokyo)* 1989; 37(9): 2531-32.

Umarani, D., et al. "Ethanol induced metabolic alterations and the effect of *Phyllanthus niruri* in their reversal." *Ancient Sci. Life* 1985; 4(3): 174-80.

Ramakrishnan, P. N., et al. "Oral hypoglycaemic effect of *Phyllanthus niruri* (Linn.) leaves." *Indian J. Pharm. Sci.* 1982; 44(1): 10-12.

Immunomodulatory Actions:

Mellinger, C., et al. "Chemical and immunological modifications of an arabinogalactan present in tea preparations of *Phyllanthus niruri* after treatment with gastric fluid." *Int. J. Biol. Macromol.* 2008 Aug; 43(2): 115-20.

Antiparasitic, Antimalarial, Wound-Healing & Other Antimicrobial Actions:

Rahuman, A., et al. "Larvicidal activity of some Euphorbiaceae plant extracts against *Aedes aegypti* and *Culex quinquefasciatus* (Diptera: Culicidae)." *Parasitol. Res.* 2008 Apr; 102(5): 867-73.

Dapper, D., et al. "Antiplasmodial effects of the aqueous extract of *Phyllanthus amarus* Schumacher and Thonn against *Plasmodium berghei* in Swiss albino mice." *Niger. J. Physiol. Sci.* 2007 Jun-Dec; 22(1-2): 19-25.

Okigbo, R., et al. "Antimicrobial effects of *Piper guineense* 'Uziza' and *Phyllanthus amarus* 'Ebenizo' on *Candida albicans* and *Streptococcus faecalis*." *Acta Microbiol. Immunol. Hung.* 2007 Dec; 54(4): 353-66.

Traoré, M., et al. "In vitro and in vivo antiplasmodial activity of 'saye', an herbal remedy used in Burkina Faso traditional medicine." *Phytother. Res.* 2008; 22(4): 550-1.

Shakil, N., et al. "Nematicidal prenylated flavanones from *Phyllanthus niruri*." *Phytochemistry.* 2008 Feb; 69(3): 759-64.

Mustofa, S., et al. "In vitro and in vivo antiplasmodial activity and cytotoxicity of extracts of *Phyllanthus niruri* L. herbs traditionally used to treat malaria in Indonesia." *Southeast Asian J. Trop. Med. Public Health.* 2007 Jul; 38(4): 609-15

Mazumder, A., et al. "Antimicrobial potentiality of *Phyllanthus amarus* against drug resistant pathogens." *Nat. Prod. Res.* 2006; 20(4):323-6.

Devi, V., et al. "Effect of *Phyllanthus niruri* on wound healing in rats." *Indian J. Physiol Pharmacol.* 2005 Oct-Dec; 49(4): 487-90.

Kolodziej, H., et al. "Tannins and related compounds induce nitric oxide synthase and cytokines gene expressions in *Leishmania major*-infected macrophage-like RAW 264.7 cells." *Bioorg. Med. Chem.* 2005 Dec; 13(23): 6470-6.

Subeki, S., et al. "Anti-babesial and anti-plasmodial compounds from *Phyllanthus niruri*." *J. Nat. Prod.* 2005; 68(4): 537-9.

Kloucek, P., et al. "Antibacterial screening of some Peruvian medicinal plants used in Calleria District." *J. Ethnopharmacol.* 2005 Jun; 99(2): 309-12.

Cimanga, R. K., et al. "In vitro antiplasmodial activity of callus culture extracts and fractions from fresh apical stems of *Phyllanthus niruri* L. (Euphorbiaceae): part 2." *J. Ethnopharmacol.* 2004 Dec; 95(2-3): 399-404.

Agrawal, A., et al. "Evaluation of inhibitory effect of the plant *Phyllanthus amarus* against dermatophytic fungi *Microsporum gypseum*." *Biomed. Environ. Sci.* 2004 Sep; 17(3): 359-65.

Tona, L., et al. "In vitro antiplasmodial activity of extracts and fractions from seven medicinal plants used in the Democratic Republic of Congo." *J. Ethnopharmacol.* 2004 Jul; 93(1): 27-32.

Mesia, L. T. K., et al. "In-vitro antimalarial activity of *Cassia occidentalis*, *Morinda morindoides* and *Phyllanthus niruri*." *Ann. Trop. Med. Parasitol.* 2001; 95(1): 47-57.

Tona, L., et al. "Antimalarial activity of 20 crude extracts from nine African medicinal plants used in Kinshasa, Congo." *J. Ethnopharmacol.* 1999; 68(1/3): 193-203.

Farouk, A., et al. "Antimicrobial activity of certain Sudanese plants used in folkloric medicine. Screening for antibacterial activity (I)." *Fitoterapia* 1983; 54(1): 3-7.

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