

Biological Activities for Extracts of Chanca Piedra (*Phyllanthus niruri, amarus*)

| Part - Origin | Activity Tested For | Type Extract | Test Model | Dosage | Result | Notes/Organism tested | Ref # |
|-----------------------|--------------------------|-----------------|------------------------|---------------|----------|---|--------|
| Entire Plant Thailand | Toxic Effect (general) | Plant | Oral Human Child | Not stated | Inactive | No toxic effects noticed. | J15003 |
| Entire Plant Congo | Toxic Effect (general) | CH2CL2 Ext | IG Mouse | 500.0 mg/kg | Inactive | | L14698 |
| Entire Plant Congo | Toxic Effect (general) | ETOH (100%) Ext | IG Mouse | 500.0 mg/kg | Inactive | | L14698 |
| Entire Plant Congo | Toxic Effect (general) | H2O EXT | IG Mouse | 500.0 mg/kg | Inactive | | L14698 |
| Aerial Parts Thailand | Toxic Effect (general) | Not stated | Oral Mouse Oral Rat | Not stated | Inactive | | M18836 |
| Entire Plant Thailand | Toxic Effect (general) | ETOH-H2O Ext | GI Mouse SC Mouse | 10.0 gm/kg | Inactive | Dose expressed as dry weight of plant. | R00001 |
| Aerial Parts India | Toxic Effect (general) | Not stated | Oral Mouse | 0.2 mg/day | Inactive | Dosed for 90 days. No mortality nor weight loss in experimental animals. | M16877 |
| Entire Plant India | Toxic Effect (general) | ETOH (100%) Ext | Oral Mouse | 100 mg/kg | Inactive | Dosing for 30 days showed no toxic effects. | QP1011 |
| Entire Plant India | Toxicity Assessment | ETOH-H2O Ext | IP Mouse | 1.0 gm/kg | Equiv. | Maximum tolerated dosage. | A03335 |
| Entire Plant India | Toxic Effect (general) | H2O Ext | IP Mouse | 1.8 mg/animal | Inactive | | M17062 |
| Entire Plant India | Toxicity Assessment | H2O Ext | Oral Mouse | 0.1 mg/animal | Inactive | No loss of weight found 7 days after treatment with Phyllanthus niruri extract. | M16717 |
| Entire Plant Thailand | Cardiotoxic Activity | ETOH-H2O Ext | IV Dog | Variable | Inactive | | W3022a |
| Aerial Parts India | Hepatotoxic Activity | Not stated | Oral Mouse | 0.2 mg/day | Inactive | Dosed for 90 Days. | M16877 |
| Leaf Malaysia | Tumor Promoting Activity | Ether Ext | Cell Culture | 1.0 mcg/ml | Inactive | Epstein Barr Assay (Designed to test for tumor promoting activity.) | J13478 |
| Leaf Malaysia | Inflammation Induction | Ether Ext | External Mouse | 10.0 mcl | Inactive | Ear | J13478 |
| Not stated Hawaii | Antiimplantation Effect | Not stated | SC Mouse | 0.2 ml/animal | Inactive | | A05104 |

GI = Gastric Intubation IG = Intragastric IP = Intraperitoneally IV = Intravenously SC = Subcutaneously IM = Intramuscular
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| Entire Plant India | Contraceptive Effect | ETOH (100%)Ext | Oral Mouse Female | 100 mg/kg | Active | Female mice evidenced a change in the hormonal milieu (HSDs hormonal conversion levels) that governs female reproductive function and manifested a definite contraceptive effect. Effects were reversible upon withdrawal of feeding for 45 days. | QP1011 |
| Aerial Parts Thailand | Convulsant Activity | Fraction | IP Mouse IP Rat SC Mouse SC Rat | Not stated | Active | | M18836 |
| Aerial Parts Thailand | Uterine Relaxation Effect | Not stated | Not stated | Not stated | Active | | M18836 |
| Aerial Parts Thailand | Uterine Relaxation Effect | Fraction | Not stated | Not stated | Active | | M18836 |
| Not stated China | Cell Proliferation Inhibition | H2O Ext | Cell Culture | 50.0 mcg/ml | Inactive | Mononuclear leukocytes | L12764 |
| Entire Plant Brail | Mitogenic Activity | Infusion | Cell Culture | Not Stated | Inactive | Splenocytes (mouse) | L07194 |
| Entire Plant India | Anticancer Activity | ETOH-H2O Ext | Oral Mouse | IC50: 540 mcg/ml | Active | In tumor bearing mice, extract inhibited aniline hydroxylase (P-450 enzyme) | QP1006 |
| Entire Plant India | Anticancer Activity | ETOH-H2O Ext | Cell Culture | IC50: 25 mcg/ml | Active | Inhibited DNA topoisomerase II of <i>Saccharomyces cerevisiae</i> mutant cell cultures and inhibited cell cycle regulatory enzyme CDC25 tyrosine phosphatase. | QP1006 |
| Entire Plant India | Anticancer Activity | H2O Ext | Oral Mouse | 150 mg/kg | Active | Increased survival rate from 33 weeks (control group) to 52 weeks in rats with hepatocellular carcinoma. | QP1012 |
| Entire Plant India | Anticancer Activity | H2O Ext | Oral Mouse | Not stated | Active | vs. N-nitrosodiethylamine induced hepatocarcinogenesis. Dose-dependently lowered tumor incidence, levels of carcinogen metabolizing enzymes, levels of liver cancer markers and liver injury markers. | QP1015 |

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|------------------------|------------------------|---------------------------|----------------------|-----------------|----------|---|--------|
| Entire Plant India | Antitumor Activity | ETOH-H2O Ext | IP Mouse | Not stated | Active | Leukemia (Friend - Virus-solid) | A03335 |
| Entire Plant India | Antitumor Activity | ETOH-H2O Ext | Oral Mouse | Not stated | Active | vs. 20-methylcholanthrene induced sarcoma development | QP1006 |
| Entire Plant India | Antitumor Activity | ETOH-H2O Ext | Oral Mouse | Not stated | Active | Prolonged lifespan of mice with Dalton's Lymphoma Ascites and Ehrlich Ascites carcinoma and reduced the volume of transplanted solid tumors. | QP1006 |
| Aerial Parts Indonesia | Antitumor Activity | ETOH (95%) Ext H2O Ext | IP Mouse IP Mouse | 100.0 mg/kg | Inactive | vs. Sarcoma 180(asc) | M23643 |
| Leaf Brazil | Antitumor Activity | ETOH (50%) Ext | IP Rat | 142.0 mg/kg | Inactive | Cancer - Walker-256 | L13474 |
| Entire Plant India | Cytotoxic Activity | ETOH (50%) Ext | Cell Culture | ED50 >20 mcg/ml | Inactive | Cancer - 9kb | A03335 |
| Entire Plant Mexico | Cytotoxic Activity | ETOH (70%) Ext | Cell Culture | 100.0 mcg/ml | Inactive | Cancer - HeLa | L09666 |
| Entire Plant Japan | Cytotoxic Activity | MEOH EXT | Cell Culture | 50.0 mcg/ml | Equiv. | Cancer - 9kb (18% Inhibition) | K27314 |
| Leaf India | Antimutagenic Activity | H2O Ext | IG Mouse | 10.0 ml/kg | Active | vs. nickle-induced clastogenicity. | K07087 |
| Entire Plant India | Antimutagenic Activity | H2O Ext | Cell Culture | 0.25 mg/plate | Active | vs. <i>Salmonella typhimuriums</i> (3 strains) | QP1005 |
| Entire Plant India | Antimutagenic Activity | H2O Ext | Cell Culture | 0.25 mg/plate | Active | vs. 2-acetaminofluorene and aflatoxin B(1)- induced mutagenicity. | QP1005 |
| Entire Plant India | Antimutagenic Activity | H2O Ext | Cell Culture | 1 mg/plate | Active | vs. NaN3- MNNG- and NPD- induced mutagenicity. | QP1005 |
| Entire Plant India | Antimutagenic Activity | H2O Ext | Oral Rat | Not stated | Active | vs. benzoapyrene-induced mutagenicity. | QP1005 |
| Entire Plant Thailand | Antimutagenic Activity | H2O Ext | Cell Culture | Not stated | Active | Evidenced a dose-dependent antimutagenic effect against various chemical mutagens in hamster liver cells, <i>Salmonella</i> strains and <i>E. coli</i> strains. | QP1007 |

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| Entire Plant Thailand | Antimutagenic Activity | H2O Ext | Oral Hamster | Not stated | Active | Inhibited DNA single -strand breaks caused by dimethyl-nitrosamine in liver cells. | QP1007 |
| Fruit + Leaf India | Chromosome Aberration Inhibition | H2O Ext | GI Mouse | 685.0 mg/kg | Active | vs. chromosome damage induced by lead nitrate and aluminum sulphate in bone marrow chromosomes. Dosing for 7 days. | M25745 |
| Entire Plant India | Antigenotoxic | H2O Ext | Plant Culture | 0.25 to 1 % | Active | vs. chemical induced chromosomal irregularities. Dose dependent antigenotoxic effect observed. | QP1018 |
| Entire Plant India | Antihepatotoxic Activity | Not stated | Oral Human Child | Various | Active | Plant is reported as an effective single drug in the treatment of infective hepatitis in children. Appetite returned to normal within five weeks of the treatment. No side effects were seen. | M16690 |
| Entire Plant China | Antihepatotoxic Activity | Plant Powder | Oral Human Adult | 0.9 gm/day | Active | vs. 42 cases of chronic hepatitis | E00447 |
| Entire Plant Thailand | Antihepatotoxic Activity | Plant | Oral Human Child | Not stated | Active | Children treated with <i>P. niruri</i> extract for acute hepatitis had liver function return to normal within 5 days. | J15003 |
| Aerial Parts India | Antihepatotoxic Activity | Hexane Ext | Cell Culture | 1.0 mg/ml | Active | Cells-rat-liver. vs. CCL4-induced hepatotoxicity. (Results significant at p < 0.01 level.) | T11593 |
| Aerial Parts India | Antihepatotoxic Activity | Hexane Ext | Cell Culture | 1.0 mg/ml | Active | Cells-rat-liver. vs. carbon tetrachloride- and galactosamine-induced toxicity | T11593 |
| Entire Plant India | Antihepatotoxic Activity | H2O Ext | IG Rat | 100.0 mg/animal | Active | vs. carbon tetrachloride induced mitochondrial dysfunction. | L06121 |

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| Entire Plant India | Antihepatotoxic Activity | Plant Powder | IG Rat | 200.0 mg/kg | Active | Liver homogenates vs. ethanol treated rats. Dosed for 45 days. Triglyceride, cholesterol and phospholipid contents in fatty liver were reduced to normal levels. | M17464 |
| Entire Plant India | Antihepatotoxic Activity | Not stated | Rat | Not stated | Active | vs. CCL4-induced hepatotoxicity. Pretreatment was required for effect. | M15897 |
| Entire Plant India | Glutamate-Oxaloacetate-Transaminase Inhibition | Saline Ext | IG Rat | 400.0 mg/kg | Active | vs. CCL4-induced hepatotoxicity. | K29665 |
| Entire Plant Brail | Colony-Stimulating Factor Production Stimulation | Infusion | IP Mouse | 0.5 ml/animal | Active | vs. IPS-induced proliferation | L07194 |
| Aerial Parts India | Radioprotective Effect | ETOH (35%) Ext | IP Mouse | 25.0 mg/kg | Active | Protected mouse chromosomes against 4 gy of gamma radiation damage. | L09295 |
| Entire Plant Brazil | Anti-lithogenic Activity | H2O Ext | Oral Rat | 1.25 mg/ml/day | Strong Activity | vs. CaOx seeded bladder. Strongly inhibited the growth of calculus and reduced the number of stone satellites. | QP1001 |
| Entire Plant Brazil | Anti-lithogenic Activity | H2O Ext | Cell Culture | 1 mg/ml | Strong Activity | Cells-renal tubular epithelium vs. calcium oxalate induced endocytosis. Strongly inhibited CaOx crystal formation. | L04139 |
| Leaf India | Antihyperglycemic Activity | H2O Ext | GI Rabbit | Not stated | Active | vs. alloxan-induced Hyperglycemia | M09944 |
| Entire Plant India | Antihyperglycemic Activity | H2O Ext | IG Rat | Not stated | Active | vs. alloxan-induced hyperglycemia. | M22721 |
| Entire Plant India | Hypoglycemic Activity | Plant Powder | Oral Human Adult | Various | Active | Blood glucose levels were significantly reduced in the nine human subjects studied. | QP1003 |
| Leaf India | Hypoglycemic Activity | H2O Ext | GI Rabbit | Not stated | Active | | M09944 |
| Aerial Parts Tanzania | Hypoglycemic Activity | H2O Ext | Oral Human Adult | 12.5 gm /100 ml | Inactive | 21 non-insulin dependent diabetic patients | QP1009 |

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| Entire Plant India | Hypoglycemic Activity | H2O Ext | Oral Rabbit | 10.0 mg/kg | Equiv. | Drop in blood sugar of 15 mg relative to inert-treated control indicated positive results. | A14379 |
| Entire Plant Paraguay | Aldose Reductase Inhibition | ETOH (70%) Ext | Not stated | LC50: 1.0 mcg/ml | Active | | M21373 |
| Entire Plant India | Antihypercholesterolemic Activity | Plant | Oral Rat | Not stated | Active | Fatty liver was induced with alcohol. The plant material reduced the increased deposition of triglycerides, cholesterol and phospholipids in the liver, heart and kidney that resulted from alcohol treatment. | T14998 |
| Entire Plant India | Antihyperlipemic Activity | H2O Ext | Oral Rat | 250 mg/kg | Active | Serum lipids were lowered in single dose. Inhibited hepatic cholesterol biosynthesis and increased bile acid excretion. | QP1002 |
| Entire Plant India | Antihyperlipemic Activity | H2O Ext | Oral Rat | 100 mg/kg | Active | Animals fed extract with cholesterol (25 mg/kg) for 30 days had lower apoprotein levels of VLDL and LDL than controls. | QP1002 |
| Entire Plant India | Antihyperlipemic Activity | Plant Powder | Oral Rat | Not stated | Active | Triglycerides, cholesterol and phospholipids in the liver, heart and kidney that resulted from alcohol treatment. | T14998 |
| Callus Tissue Brazil | Spasmolytic Activity | MEOH Ext | Guinea Pig | 320.0 mcg/ml | Inactive | Ileum. vs. ACH-induced contractions. | K17672 |
| Entire Plant Brazil | Antispasmodic Activity | Alkaloid fraction | In vitro | Not stated | Active | Demonstrated a dose dependent antispasmodic effect on guinea pig ileum and rat uterus strips comparable to papaverine. | T09046 |
| Entire Plant India | Antispasmodic Activity | ETOH-H2O Ext | Guinea Pig | Not stated | Active | Ileum. vs. ACH: and histamine-induced spasms | A03335 |
| Entire Plant Thailand | Antispasmodic Activity | ETOH-H2O Ext | Guinea Pig | Variable | Inactive | Ileum | W3022a |
| Entire Plant Paraguay | Angiotensin-Converting Enzyme Inhibition | Fraction: geraniin | Not stated | 100.0 mcg/ml | Active | | M18866 |

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| Aerial Parts Thailand | Chronotropic Effect Negative | Fraction: geraniin | Frog IP Mouse SC Rat | Not stated Not stated Not stated | Active | | M18836 |
| Entire Plant Thailand | Chronotropic Effect Positive | ETOH-H2O Ext | IV Dog | Variable | Inactive | | W3022a |
| Aerial Parts Thailand | Inotropic Effect Negative | Fraction: geraniin | Frog IP Mouse SC Rat | Not stated | Active | | M18836 |
| Entire Plant India | Hypotensive Activity | Powdered Plant | Oral Human Adult | Various | Active | A significant reduction in systolic blood pressure in non-diabetic hypertensive and female subjects was noted. | QP1003 |
| Aerial Parts Thailand | Hypotensive Activity | Fraction: geraniin | IV Dog | Not stated | Active | | M18836 |
| Entire Plant Thailand | Hypotensive Activity | ETOH (50%) Ext | IV Dog | Variable | Inactive | | W3022a |
| Aerial Parts Thailand | Diuretic Activity | Not stated | Oral Human Adult | Not stated | Active | | M18836 |
| Aerial Parts India | Diuretic Activity | Alcohol Ext | Rat | 0.27 ml/kg | Weak Activity | Activity was increased when the dosage was halved and combined with <i>Boerhaavia diffusa</i> | J12663 |
| Not stated Brazil | Diuretic Activity | Fluid Ext | Oral Human Adult | Not stated | Active | | A14531 |
| Entire Plant India | Diuretic Activity | Powdered Plant | Human Adult | Various | Active | Significant increase in 24 hr urine volume, urine and serum Na levels was observed in 9 mild hypertensive human subjects. | QP1003 |
| Aerial Parts India | Antidiarrheal Activity | ETOH (50%) Ext | Guinea Pig | 300.0 mg/ animal | Inactive | vs. <i>E. coli</i> - and rotoxin-induced diarrhea. | K17122 |
| Leaf Nigeria | Anti-diarrheal Activity | H2O Ext | Oral Mice | 100 mg/kg | Active | vs. castor oil induced diarrhea. | QP1010 |
| Aerial Parts Thailand | Smooth Muscle Relaxant Activity | Fraction: geraniin | Not stated | Not stated | Active | Blood vessel , intestine, stomach | M18836 |
| Entire Plant India | Antiinflammatory Activity | Plant | Oral Human Adult | Variable | Active | | T06320 |

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| Callus Tissue Brazil | Analgesic Activity | MEOH Ext | IP Mouse | 10.0 mg/kg | Active | vs. acetic acid-induced writhing. | K17672 |
| Callus Tissue Brazil | Analgesic Activity | MEOH Ext | IP Mouse | 10.0 mg/kg | Active | vs. formalin-induced pedal edema | K17672 |
| Callus Tissue Brazil | Analgesic Activity | MEOH Ext | IP Mouse | 50.0 mg/kg | Inactive | vs. tail flick response to radiant heat. | K17672 |
| Entire Plant Brazil | Analgesic Activity | ETOH (50%) Ext | IG Mouse | 50 mg/kg | Active | Antinociceptive effects demonstrated using 5 different models of nociception. | K19491 |
| Entire Plant Brazil | Analgesic Activity | ETOH (50%) Ext | IP Mouse | 0.3 mg/kg | Active | Antinociceptive effects demonstrated using 5 different models of nociception. | K19491 |
| Entire Plant Brazil | Analgesic Activity | Hydroalcohol Ext | IP Mouse | ED50: 4.3 mg/kg | Active | vs. the second phase. vs. formalin-induced pain. | L11330 |
| Entire Plant Brazil | Analgesic Activity | Hydroalcohol Ext | IG Mouse | 200.0 mg/kg | Active | vs. the second phase. Vs. formalin-induced pain. | L11330 |
| Entire Plant Brazil | Analgesic Activity | Hydroalcohol Ext | IG Mouse | ED50: 31.0 mg/kg | Active | vs. capsaicin-induced licking. | L11330 |
| Entire Plant Brazil | Analgesic Activity | Hydroalcohol Ext | IP Mouse | ED50: 6.7 mg/kg | Active | vs. capsaicin-induced neurogenic pain. | L11330 |
| Entire Plant Brazil | Analgesic Activity | Hydroalcohol Ext | IP Mouse | ED50: 7.4 mg/kg | Active | vs. acetic acid-induced writhing. | L11330 |
| Entire Plant Brazil | Analgesic Activity | Hydroalcohol Ext | IP Mouse | ED50: 2.1 to 6.1 mg/kg | Strong Activity | caused marked and dose-dependent inhibition to capsaicin-induced pain | K28213 |
| Entire Plant Brazil | Analgesic Activity | Hydroalcohol Ext | Oral Mouse | ED50: 35mg/kg | Strong Activity | caused marked and dose-dependent inhibition to capsaicin-induced pain | K28213 |
| Entire Plant Thailand | Antihistamine Activity | ETOH-H2O Ext | Guinea Pig | Not stated | Inactive | Ileum | W3022a |
| Aerial Parts Thailand | Antipyretic Activity | Not stated | Not stated | Not stated | Active | vs. typhoid vaccine-induced fever. | M18836 |
| Entire Plant Thailand | Antipyretic Activity | ETOH-H2O Ext | GI Rabbit | Variable | Inactive | vs. yeast-induced pyrexia. | W3022a |

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| Entire Plant Japan | Antiaging Activity | Not stated | External Human Adult | 1.0% | Active | | J10972 |
| Entire Plant India | Reverse Transcriptase Inhibition | H2O Ext | | ID50: 50 mcg/ml | Active | Virus- HIV-1 | K08911 |
| Entire Plant Taiwan | Reverse Transcriptase Inhibition | H2O Ext | | ID50: 50 mcg/ml | Active | Virus- HIV-1 | K08911 |
| Entire Plant India | DNA Polymerase Inhibition | H2O Ext | | Variable | Active | | M17062 |
| Entire Plant India | DNA Polymerase Inhibition | MEOH Ext | | Variable | Active | | M17062 |
| Entire Plant Pakistan | DNA Polymerase Inhibition | H2O Ext | | IC50: 410 mcg/ml | Inactive | | M30257 |
| Flowers Puerto Rico | DNA Polymerase Inhibition | H2O Ext | | IC50: 381 mcg/ml | Inactive | | M30257 |
| Entire Plant Usa | DNA Polymerase Inhibition | H2O Ext | | IC50: 230 mcg/ml | Inactive | | M30257 |
| Entire Plant India | DNA Polymerase Inhibition | H2O Ext | | 50.0 mg/ml | Active | vs. activity of woodchuck hepatitis virus DNA polymerase 50 mg/ml gave about 25% inhibition. | M16717 |
| Entire Plant India | Hepatitis B Surface Antigen Inactivation | H2O Ext | | 0.2 mg/ml 0.63 mg/ml | Active | Virus - hepatitis B vs. reaction of woodchuck hepatitis surface antigen with hepatitis B (human) antibody. | M16717 |
| Leaf Gabon | Hepatitis Antigen Expression Inhibition | H2O Ext MEOH Ext | | IC50: 650 Ng/ml IC50: 1.2 mcg/ml | Active | Hepatitis B surface antigen inactivation was assayed. | K10104 |
| Root India | Hepatitis B Surface Antigen Inactivation | CHCL3 Ext | | 2.0% | Active | | T06317 |
| Root India | Hepatitis B Surface Antigen Inactivation | H2O Ext | | 2.0% | Active | | M17007 |
| Leaf + Stem India | Hepatitis B Surface Antigen Inactivation | H2O Ext | | 2.0% | Active | | M17007 |
| Leaf + Stem India | Hepatitis B Surface Antigen Inactivation | CHCL3 Ext | | 2.0% | Active | | T06317 |

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| Leaf Senegal | Hepatitis Antigen Expression Inhibition | H2O Ext | | IC50: 3.3 mcg/ml | Active | Hepatitis B Surface Antigen Inactivation Was Assayed. | K10104 |
| Entire Plant India | Hepatitis B Surface Antigen Inactivation | H2O Est MEOH Ext | | Variable | Active | Biological activity reported has been patented. | M17062 |
| Entire Plant China | Antiviral Activity | Powder | Oral Human Adult | Not stated | Active | 35 patients with chronic Hepatitis B seroconverted on HbeAG from positive to negative. No effect on HbsAg. | E00447 |
| Aerial Parts India | Antiviral Activity | ETOH (95%) Ext | Oral Human Adult | Not stated | Active | Virus - Hepatitis B. Antiviral activity was measured in serum of patients who were positive for the hepatitis B virus. | M24831 |
| Entire Plant China | Antiviral Activity | Plant Powder | Oral Human Adult | 900 mg TID | Active | Thirty patients treated with extract performed better than interferon treated control group of 25 patients. The total effective rate of the extract treated group was 83.3% Normalization of ALT, A/G and SB was significantly higher than the interferon-treated group. Seroconversion rate of HbeAg and HBV- DNA was 47.8% | QP1008 |
| Entire Plant India | Antiviral Activity | H2O Ext | IG Woodchuck | Not stated | Active | Virus - Hepatitis B | M17062 |
| Entire Plant India | Antiviral Activity | H2O Ext | IP Woodchuck | 9.0 mg/animal | Active | vs. Hepatitis B. in recently infected woodchucks. 3 out of 4 experimental animals showed elimination of woodchuck hepatitis surface antigen and woodchuck hepatitis DNA polymerase after 72 days. They remained negative for both for 300 days. Control animal did not show any change. | M16717 |

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| Entire Plant India | Antiviral Activity | H2O Ext | IP Woodchuck | 9.0 mg/animal | Active | vs. hepatitis in long-term chronic carriers of woodchuck hepatitis. Titre of woodchuck hepatitis surface. Antigen was lowered relative to untreated controls. 0.5 ml extract was given once a week. | M16717 |
| Entire Plant China | Antiviral Activity | Plant Powder | Oral Human Adult | 2.7 gm/day | Active | 42 chronic Hepatitis B patients were enrolled in study of efficacy of given extract at altering immune status. | K25123 |
| Entire Plant India | Antiviral Activity | H2O Ext | Oral Human Adult | Not stated | Active | 22 of 37 carriers of Hepatitis B lost HBV surface antigen after 30 days treatment with extract. They continue negative for 9 months. | QP1021 |
| Entire Plant USA | Antiviral Activity | H2O Ext | Oral Human Adult | Not stated | Active | 60% of human carriers of Hepatitis B treated for one month with the extract seroconverted. | QP1020 |
| Entire Plant USA | Antiviral Activity | H2O Ext | IP Woodchuck | Not stated | Active | 3 of 4 animals recently infected with Hep B seroconverted. Animals infected for 3 months or longer decreased viral levels. | QP1020 |
| Entire Plant India | Antiviral Activity | Not stated | Mice | Not stated | Active | Virus - Hepatitis B Decreased hepatic HBsAg mRNA levels. | QP1016 |
| Entire Plant Taiwan | Antiviral Activity | H2O Ext | Cell Culture | Various | Active | Virus - Hepatitis B Dose dependently inhibited cellular proliferation and suppressed HBsAg gene expression in cultured hepatoma cell line HepA2. | QP1019 |
| Entire Plant India | Antiviral Activity | Not stated | Cell Culture | Not stated | Active | Virus - Hepatitis B | QP1016 |
| Entire Plant India | Antiviral Activity | H2O Ext | Cell Culture | 1 mg/ml | Active | Dose dependently inhibited secretion of HBsAg in a human hepatocellular carcinoma cell line for 48 hours. | QP1017 |

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| Entire Plant USA | Antiviral Activity | H2O Ext | Cell Culture | Not stated | Active | Virus - Hepatitis B | QP1014 |
| Entire Plant USA | Antiviral Activity | H2O Ext | Cell Culture | IC50: 381 mcg/ml | Inactive | Virus - Hepatitis vs. the Hepadnavirus DNA Polymerase. | K21201 |
| Entire Plant USA | Antiviral Activity | H2O Ext | Cell Culture | IC50: 410 mcg/ml | Inactive | Virus - Hepatitis vs. the Hepadnavirus DNA Polymerase. | K21201 |
| Entire Plant India | Antiviral Activity | ETOH (95%) Ext | Cell Culture | Not stated | Equiv. | Virus - Tobacco Mosaic (Viral inhibitory activity was 7%) | K09718 |
| Leaf India | Antiviral Activity | Buffered Ext | | 4.0% | Active | Virus - Peanut Green Mosaic Virus - Tobacco Mosaic Virus - Tobacco Ring Spot | T10824 |
| Root India | Antiviral Activity | Buffered Ext | | 4.0% | Active | Virus - Green Mosaic Virus - Tobacco Mosaic Virus - Tobacco Ring Spot | T10824 |
| Entire Plant Mexico | Antibacterial Activity | ETOH (70%) Ext | Agar Plate | MIC: 200.0 mcg | Active | <i>Staphylococcus aureus</i> | L09666 |
| Leaf Indonesia | Antibacterial Activity | Saline Ext | Agar Plate | 1-10% | Active | <i>Pasteurella pestis</i> <i>Staphylococcus aureus</i> | W01047 |
| Flower + Fruit + Leaf Mexico | Antibacterial Activity | ETOH (70%) Ext | Agar Plate | CD: 900.0 mcg | Active | <i>Micrococcus luteus</i> | L09666 |
| Leaf Sudan | Antibacterial Activity | MEOH Ext | Agar Plate | 1.0 mg/ml | Active | <i>Staphylococcus aureus</i> | T06766 |
| Entire Plant Mauritius | Antibacterial Activity | MEOH Ext | Agar Plate | 2.0 mg/ml 4.0 mg/ml 8.0 mg/ml | Weak Activity | <i>Pseudomonas aeruginosa</i> <i>Salmonella typhi</i> <i>Staphylococcus aureus</i> | L13564 |
| Entire Plant Tanzania | Antibacterial Activity | H2O Ext | Agar Plate | 1.0% | Inactive | <i>Neisseria gonorrhoea</i> | T10354 |
| Leaf Indonesia | Antibacterial Activity | Saline Ext | Agar Plate | 1-10 | Inactive | <i>Escherichia coli</i> | W01047 |
| Entire Plant Mexico | Antibacterial Activity | ETOH (70%) Ext | Agar Plate | MIC >50.0 mcg | Inactive | <i>Escherichia coli</i> | L09666 |
| Entire Plant Mauritius | Antibacterial Activity | MEOH Ext | Agar Plate | Not stated | Inactive | <i>Escherichia coli</i> | L13564 |

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| Leaf Sudan | Antibacterial Activity | CHCL3 Ext | Agar Plate | 1.0 gm/ml | Inactive | <i>Bacillus subtilis</i> <i>Escherichia coli</i> <i>Pseudomonas aeruginosa</i> <i>Staphylococcus aureus</i> | T06766 |
| Leaf Sudan | Antibacterial Activity | MEOH Ext | Agar Plate | 1.0 gm/ml | Inactive | <i>Bacillus subtilis</i> <i>Escherichia coli</i> <i>Pseudomonas aeruginosa</i> | T06766 |
| Entire Plant Puerto Rico | Molluscicidal Activity | H2O Ext | | LD100: > 1m ppm | Inactive | <i>Lymnaea columella</i> <i>Lymnaea cubensis</i> | T04621 |
| Root Brazil | Molluscicidal Activity | Hot H2O Ext | | 10,000 ppm | Inactive | <i>Biomphalaria straminea</i> | W00500 |
| Stem Sudan | Molluscicidal Activity | ETOH (95%) Ext | | 250 ppm | Inactive | <i>Biomphalaria pfeifferi</i> | T07986 |
| Stem Sudan | Molluscicidal Activity | ETOH (95%) Ext | | 250 ppm / lb | Inactive | <i>Bulinus Truncatus</i> | T07986 |
| Stem Sudan | Molluscicidal Activity | Pet Ether Ext | | 25 ppm | Active | <i>Biomphalaria pfeifferi</i> | T07986 |
| Stem Sudan | Molluscicidal Activity | Pet Ether Ext | | 25 ppm | Active | <i>Bulinus truncatus</i> | T07986 |
| Bark Sri Lanka | Nematocidal Activity | Decoction | | 1.0 mg/ml | Active | <i>Toxocara canis</i> | M26175 |
| Entire Plant Congo | Antimalarial Activity | CH2CL2 Ext | IG Mouse | 200 mg/kg | Active | <i>Plasmodium berghei</i> | L14698 |
| Entire Plant Congo | Antimalarial Activity | CH2CL2 Ext | | 6 mcg/ml | Active | <i>Plasmodium falciparum</i> | L08513 |
| Entire Plant Congo | Antimalarial Activity | ETOH (100%) Ext | | 6 mcg/ml | Active | <i>Plasmodium falciparum</i> | L08513 |
| Entire Plant Congo | Antimalarial Activity | ETOH (100%) Ext | IG Mouse | 200 mg/kg | Active | <i>Plasmodium berghei</i> Reduced parasitaemia by 74%. | L14698 |
| Entire Plant Congo | Antimalarial Activity | H2O Ext | IG Mouse | 200 mg/kg | Inactive | <i>Plasmodium berghei</i> | L14698 |
| Entire Plant Mauritius | Antifungal Activity | MEOH Ext | Agar Plate | Not stated | Inactive | <i>Aspergillus niger</i> | L13564 |
| Entire Plant Mauritius | Antiyeast Activity | MEOH Ext | Agar Plate | Not stated | Inactive | <i>Candida albicans</i> | L13564 |

Biological Activities for Compounds in Chanca Piedra (*Phyllanthus niruri, amarus*)

| Compound | Activity Tested For | Test Model | Dosage | Result | Notes/Organism tested | Ref # |
|-------------------------------------|--------------------------------------|--------------|----------------------------------|------------------|---|--------|
| Corilagin | Antiviral Activity | Cell Culture | IC50: 20.7 mcl | Active | Virus - HIV-1 (protease) | QP1037 |
| Corilagin | TNF-Alpha Release Inhibition | In vitro | IC50: 76 mcl | Active | | QP1029 |
| Corilagin | Antihypertensive Activity | IP Rat | 5 mg/kg | Active | Lowered blood pressure through the reduction of noradrenaline release and (or) direct vasorelaxation. | QP1038 |
| Niruriside | Antiviral Activity | Cell Culture | IC50: 3.3 mcg/ml | Active | Virus - HIV Inhibitory activity against the binding of REV protein to RRE RNA. | H18818 |
| Repandusinic acid A | Antiviral Activity | Cell Culture | 2.5 mcg | Active | Virus- HIV-1 Inhibited up to 90% of HIV-1 specific p24 antigen production. | K08911 |
| Repandusinic acid A | Antiviral Activity | Cell Culture | 4.5 mcg | Active | Virus- HIV-1 Inhibited HIV-1 induce giant cell formation of SUP-T1 by 50% | K08911 |
| Repandusinic acid A | Antiviral Activity | Cell Culture | ID50: 0.05 mcg ID50: 0.06 mcg | Active Active | vs. HIV-1-RT vs. HIV-1 DNA polymerase alpha | K08911 |
| Repandusinic acid | Antiviral Activity | Cell Culture | ID50: 12.5 mcl | Active | Virus - HIV-1 (protease) | QP1037 |
| Ellagic acid | Aldose Reductase Inhibitory Activity | In vitro | Not stated | Active | Was 6 times more potent at AR inhibition than quercitrin. | M21373 |
| Phyllanthin | Antihepatotoxic Activity | Cell Culture | 1.0 mg/ml | Active | Cells-rat-liver. vs. carbon tetrachloride- and galactosamine-induced toxicity | T11593 |
| Hypophyllanthin | Antihepatotoxic Activity | Cell Culture | 1.0 mg/ml | Active | Cells-rat-liver. vs. carbon tetrachloride- and galactosamine-induced toxicity | T11593 |
| Phyllanthin Hypophyllanthin | Ancitancerous Activity | Cell Culture | not stated | Active | No direct cytotoxic effect noted on cancer cells, however, both chemicals shown to enhance the cytotoxic response of vinblastine to multidrug-resistant KB cells. Suggested interation with P-glycoprotein. | QP1023 |

| Compound | Activity Tested For | Test Model | Dosage | Result | Notes/Organism tested | Ref # |
|-------------------------------------|---|--------------|-------------------------|--------|--|--------|
| Triacontanal | Antihepatotoxic Activity | Cell Culture | 1.0 mg/ml | Active | Cells-rat-liver. vs. galactosamine-induced toxicity | T11593 |
| Geraniin | Immunostimulant Activity | Cell Culture | Not stated | Active | Induced phagocytosis | QP1036 |
| Geraniin Furosin | Analgesic Activity | IP Mouse | 3 mg/kg to 30 mg/kg | Active | 7-fold more potent than aspirin and acetaminophen | QP1013 |
| Geraniin | TNF-Alpha Release Inhibition Activity | Mouse | IC50: 0.43 mcg | Active | | QP1029 |
| Geraniin | Cancer Preventative Activity | Mice | 0.43 mg | Active | Pretreatment with geraniin prior to chemical induced skin tumors, reduced the percentage of tumor bearing mice from 80% to 40% | QP1029 |
| Geraniin | Antitumor Activity | Cell Culture | ED50: 0.1 to 0.8 mcg/ml | Active | Moderate selective cytotoxicity to PRMI-7951 melanoma human tumor cell line. | QP1035 |
| Geraniin | Antinociceptive Activity | Rat | Not stated | Active | Inhibited neurochemical [3H]GMP-PNP binding. | QP1031 |
| Geraniin | Gastroprotective Activity Antiulcerogenic Activity | Rat | 10-100 mg/kg | Active | vs. HCl-NaCl induced gastric acid back-diffusion, mucus production and mucosal ulcerations. | QP1033 |
| Geraniin | Antihypertensive Activity | IV Rat | Not stated | Active | Reduced the plasma noradrenaline in a dose-dependent fashion. | QP1039 |
| Geraniin | NFkappaB Regulatory Activity | Cell Culture | Not stated | Active | Inhibited NFkappaB and inhibited increases in nitric oxide synthase levels in activated macrophages. | QP1032 |

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