Biological Activities for Extracts of Gervão *(Stachytarpheta jamaicensis)*

Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Leaf + Stem Jamaica	Toxicity Assessment (quantitative)	H2O Ext	IP Mouse	0.1 ml			A03360
Entire Plant Brazil	Toxic Effect (general)	H2O Ext	Oral Rat	2 g/kg	Inactive	No signs of toxicity noted.	AO1009
Leaf Panama	Toxic Effect (general)	H2O Ext	IP Rat	Not stated	Active	A reduction of motor activity, alarm reaction, ataxia, sedation, analgesia, anesthesia, ptosis, piloerection, head tremors and a reduction of body temperature seen. C. Robichaud's sign present due to muscular relaxation.	AO1010
Leaf + Stem Jamaica	Spasmogenic Activity	ETOH(95%) Ext H2O Ext	Guinea Pig IP Guinea Pig	3.3 ml/l 0.33 ml/l	Active	ileum	A03360
Leaf Brazil	Anti-inflammatory Activity	ETOH Ext n-Butenol Ext	IP Rat	100 mg/kg 200 mg/kg	Active Strong Activity	Inhibited carrageenin-induced edema.	AO1008
Leaf Brazil	Anti-inflammatory Activity	ETOH Ext n-Butenol Ext	IG Rat	100 mg/kg 200 mg/kg	Active Strong Activity	vs. phlogistic agents.	AO1008
Leaf Brazil	Antinociceptive Activity	ETOH Ext n-Butenol Ext	IP Rat PO Rat	100-300 mg/kg	Active	vs. hot-plate test.	AO1008
Leaf + Stem Jamaica	Vasodilator Activity	ETOH(95%) Ext	Rat	0.033 ml/l	Active		A03360
Entire Plant Brazil	Laxative Activity	H2O Ext	Oral Rat	0.5-2g/kg	Active	Increased intestinal motility.	AO1009
Leaf Brazil	Anti-diarrheal Activity	H2O Ext	Mice	Not stated	Active	Reduced gastrointestinal propulsion (No effect on the absorption of water in intestines.)	AO1011
Entire Plant Brazil	Antiulcer Activity	H2O Ext	Oral Mice	0.5-2g /kg	Active	vs. restraintin-cold-, ethanol- and indomethacin-induced ulceration.	AO1009
Entire Plant Brazil	Antiulcer Activity	H2O Ext	Oral Mice	0.5-2g /kg	Active	Inhibited gastric acid secretion. Reduced cholinergic and histaminergic stimulation of acid secretion.	AO1009

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Entire Plant Brazil	Antacid Activity	H2O Ext	IG Mice	0.5-2g /kg	Active		AO1009
Entire Plant Brazil	Antisecretory Effect	H2O Ext	IP Mice	Not stated	Active	Inhibited basal acid secretion and secretions induced by histamine and bethanecol in pylorus-ligated mice.	AO1009
Leaf Cuba	Antifungal Activity	Acetone Ext ETOH(95%) Ext H2O Ext	Agar Plate	50%	Inactive	*Neurospora crassa*	T08589
Stem Cuba	Antifungal Activity	Acetone Ext ETOH(95%) Ext H2O Ext	Agar Plate	50%	Inactive	*Neurospora crassa*	T08589
Not stated Jamaica	Anthelmintic Activity	Not stated	Larvae	IT50=81.5 hrs	Weak Activity	*Strongyloides stercoralis*	AO1001
Entire Plant India	Larvicidal Activity	H2O Ext	Not stated	0.03 gm/ml	Active	*Culex quinquefasciatus*	M19731
Aerial Parts Taiwan	Glutamate-pyruvate-transaminase Inhibition	ETOH-H2O Ext	Cell Culture	1 mg/ml	Inactive	rat liver cells vs. CCL4- and PgE-1 induced inflammation.	T14999
Root Taiwan	Glutamate-pyruvate-transaminase Inhibition	ETOH-H2O Ext	Cell Culture	1 mg/ml	Inactive	rat liver cells vs. CCL4- and PgE-1 induced inflammation.	T14999

Biological Activities for Compounds of Gervão *(Stachytarpheta jamaicensis)*

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Ipolamiide Verbascoside	Antispasmodic Activity	Guinea pig (ileum)	Not stated	Active	vs. histamine and bradykinin induced contractions	AO1008
Ipolamiide Verbascoside	Antinociceptive Activity	IP Rat Oral Rat	100 mg/kg 300 mg/kg	Active	vs. hot-plate test.	AO1008
Ipolamiide	Anti-inflammatory Activity	Oral Rat	Not stated	Active	70.22% inhibition when administering chemical 4 hours after a phlogistic agent.	AO1008
Verbascoside (Acetoside)	Antioxidant Activity	Cell Culture	0.1 mmol/l	Active	vs. oxidized OH adducts of dAMP and dGMP.	AO1036

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Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Verbascoside (Acetoside)	Antioxidant Activity	Cell Culture	ED50: 1.0 mcmol	Strong Activity	vs. LDL peroxidation. vs. Cu(2+)-induced LDL oxidation	AO1044
Verbascoside (Acetoside)	Anti-inflammatory Activity	Oral Rat	Not stated	Active	93.99% inhibition when administering chemical 4 hours after a phlogistic agent.	AO1008
Verbascoside (Acetoside)	Antihepatotoxic Activity	Cell Culture In vivo Rat	Not stated Not stated	Active Strong Activity	vs. NADH/CCL4 induced lipid peroxidation in rat liver cells vs. CCL4 induced hepatoxicity	AO1049
Verbascoside (Acetoside)	Antihepatotoxic Activity	SC Mouse	10-50 mg/kg	Strong Activity	vs. D-Glactosamine- lipopolysaccharide- and TNF-alpha-dependent induced hepatic apoptosis and liver failure.	AO1046
Verbascoside (Acetoside)	Immunomodulatory Activity	Cell Culture	Not stated	Active	vs. neutrophil function; chemotasis and intracellular killing activity.	AO1014
Verbascoside (Acetoside)	Anti-neurotoxic Activity	Cell Culture	Not stated	Strong Activity	vs 1-methyl-4-phenylpyridium-induced apoptosis and oxidative stress in PC12 neuronal cells. Results suggest possible application for Parkinson's Disease.	AO1022
Verbascoside (Acetoside)	Antinephritic Activity	Cell Culture In vivo rat	Not stated	Strong Activity	Strong antinephritic action noted in vivo and in vitro by inhibition of intraglomerular accumulation of leukocytes through prevention of the up-regulation of ICAM-1.	AO1051
Verbascoside (Acetoside)	Antimetastatic Activity	IP Mouse	50 mg/kg	Active	vs. B16 melanoma. Increase survival rate from 52 weeks to 63 weeks and suppressed lung metastasis.	AO1026
Verbascoside (Acetoside)	Antileukemic Activity	Cell Culture	IC50: 26.7 mcg	Active	vs. promyelocytic leukemia HL-60 cells	AO1050
Verbascoside (Acetoside)	Antiviral Activity	Cell Culture	500 mcg/ml Not stated	Active Active	vs. vesicular stomatitis virus. 53.6% inhibition vs. respiratory syncytial virus	AO1035 AO1048
Verbascoside (Acetoside)	Antimicrobial Activity	Cell Culture	Not stated	Active	vs. *Proteus mirabilis*, *Staphylcoccus aureus* and mithicillin-resistant *S. aureus*.	AO1045
Verbascoside (Acetoside)	Cardioactive Activity	Rat (heart)	Not stated	Active	142% increase in prostacyclin following adminsitration of verbascoside simulated formation of cAMP.	AO1047

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Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Scutellarein	Cardioprotective Activity	IP Rat (hypertensive)	10 mg/kg	Active	Reversed ventricular remodeling, reduced hypertrophy of the cardiac muscle and collagen volume fraction, improved myocardial stiffness and protected heart cardiac muscle.	AO1037
Scutellarein	Vasoprotective Activity	Rat (aorta)	0.5%	Active	Scutellarein treatment in 1-week diabetes induction prevented endothelial dysfunction but potentiated the contractile response to phenylepherine.	AO1038
Scutellarein	Anti-inflammatory Activity	Oral Mice	150 mg/kg	Active	vs. carrageenan-induced mouse paw edema.	AO1030
Scutellarein	Anti-inflammatory Activity	Cell Culture	IC50=12.2 mmol	Active	Inhibited human recombinant synovial phospholipase A2.	AO1030
Scutellarein	Anti-inflammatory Activity	External Mice	Not stated	Active	vs. 12-O-tetradecanoylphorbol-13-acetate-induced ear edema.	AO1030
Scutellarein	Protein Kinase C Inhibitor	Not stated	Not stated	Active		AO1037
Scutellarein	Antilipid Peroxidation Activity	Cell Culture	Not stated	Active		AO1029
Scutellarein	Xanthine oxidase Inhibitory Activity	Cell Culture	Not stated	Active		AO1029
Scutellarein	Glutamate-pyruvate transaminase Inhibitory Activity	Mice	Not stated	Active	After bromobenzene intoxication scutellarein decreased serum glutamate-pyruvate transaminase activity.	AO1029
Scutellarein	Cyclic AMP phosphodiesterase Inhibition	Not stated	EC50: 30-50 mcmol	Active		AO1039
Scutellarein	Reverse Transcriptase Inhibition	Cell Culture	Not stated	Active Active Active	Avian myeloblastosis RT. Rous-associated virus-2 RT. Maloney murine leukemia virus RT.	AO1040
Hispidulin	Hepatoprotective Effect	IP Mice	50 mg/kg 150 mg/kg	Active Active	Protected against bromobenzene-induced hepatotoxicity. At 150 mg glutathione depletion was checked.	AO1031
Hispidulin	Platelet aggregation Inhibition	Cell Culture	100 mcmol	Active	Inhibited adenosine-5'-monophosphate, arachidonic acid, paf-acether and collagen induced platelet aggregation through increasing cAMP in platelets 4-fold.	AO1034

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Hispidulin	Glutamate-pyruvate transaminase Inhibitory Activity	Mice	Not stated	Active	After bromobenzene intoxication hispidulin decreased serum glutamate-pyruvate transaminase activity.	AO1029
Hispidulin	Cytotoxic Activity	Cell Culture	Not stated	Active	Hormone-dependent human prostate (LNCaP) cancer cell line.	AO1028
Hispidulin	Cytotoxic Activity	Agar Plate	100 mcg	Inactive	S. typhimurium TA98 & TA100.	AO1032
Hispidulin	Antiproliferative Activity	Cell Culture	12 mcg/ml 5 mcg/ml 5 mcg/ml	Active Active Active	Human gastric adenocarcinoma (MK-1). Human uterus carcinoma(HeLa). Murine melanoma(B16F10).	AO1027
Hispidulin	Antimutagenic Activity	Agar Plate	Not stated	Active Inactive	Inhibited mutagens 2-aminoanthracene, aflatoxin B1 (in TA98) and dimethylnitrosamine (in TA100). No effect on mutagens 2-(2-furyl)-3-(5-nitro-2-furyl) acrylamide or sodium azide (in TA98 & TA100).	AO1032
Hispidulin	Anti-inflammatory Activity	Not stated	Not stated	Active	Reduced human recombinant synovial phospholipase A2.	AO1030
Hispidulin	Antioxidant Activity	Mouse (liver)	IC50=10(-5) M	Weak Activity		AO1033
Hispidulin	Antioxidant Activity	in vitro	Not stated	Active	vs. lipid peroxidation	AO1029
Friedelin	Antiproliferative Activity	Cell Culture	Not stated	Inactive	Human leukocyte elastase.	AO1021
Friedelin	Antifungal Activity	Agar Plate	Not stated	Inactive Inactive Inactive		AO1023
Friedelin	Antibacterial Activity	Agar Plate	Not stated	Active Inactive	Gram-negative bacteria *Vibrio parahaemolyticus*	AO1023
Friedelin	Antibacterial Activity	Agar Plate	Not stated	Active	Broad and concentration dependent activity.	AO1024
Chlorogenic acid	Antibacterial Activity	Agar Plate	Not stated	Active	*L. pneumophilia*	AO1016
Chlorogenic acid	Antiviral Activity	Cell Culture	EC50=13.3 mcg/ml SI=301	Active	*Adenovirus ADV*-11	AO1017

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Chlorogenic acid	Antioxidant Activity	Not stated	Not stated	Active		AO1012
Chlorogenic acid	Anti-inflammatory Activity	Not stated	Not stated	Active		AO1018
Chlorogenic acid	Oxidative Activity	Cell Culture	Not stated	Active	Oxidation seen in human oral squamous cell carcinoma and salivary gland tumors.	AO1019
Chlorogenic acid	Chemopreventative Activity	Cell Culture	Not stated	Active	vs. human colorectal cancer. Apoptosis- and cell proliferation-independent.	AO1013
Chlorogenic acid	Cytotoxic Activity	Cell Culture	Not stated	Active Active	Human oral squamous cell carcinoma (HSC-2). Salivary gland tumor (HSG).	AO1019
Chlorogenic acid	Immune Activity	Cell Culture (human PBMC)	Not stated	Active	Inhibited staphylococcal exotoxin-induced T-cell proliferation by 98%. Inhibited the production of interleukin 1 beta, tumor necrosis factor, interleukin 6, interferon gamma, monocyte chemotactic protein I, and macrophage inflammatory protein 1alpha and 1beta by human peripheral blood mononuclear cells (PBMC).	AO1018
Chlorogenic acid	Immune Activity	Cell Culture	10-50 mcmol/l	Active Inactive	Enhanced antigen specific proliferation of lymphocytes. No effect on the production of influenza virus specific antibodies by human PBMC.	AO1020
Chlorogenic acid	Liver enzyme Modulation Activity	Rat (liver)	0.1 mmol 0.25 mmol	Inactive Active	No effect on liver enzymes. Inhibited the O-deethylation of compound EFC in microsomes.	AO1015
Spinasterol, alpha	Antispasmodic Activity	Rat (ileum)	Not stated	Active	Inhibition of spontaneous contractions of the rat ileum.	AO1042
Spinasterol	Antitumor Activity	Mouse	15 mcg	Active	Decreased the incidence of skin tumors (induced by croton oil) by 55.6% and decreased the number of tumors by 65% when applied immediately after croton oil.	AO1041
Spinasterol	Anticholesterol Effect	Mice	1% In ration	Active	Increased fecal cholesterol excretion, inhibited cholesterol absorption, decreased plasma and liver cholesterol levels, the bile acid pool size and the fecal bile acid excretion.	AO1043

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