

Biological Activities for Extracts of Espinheira Santa (*Maytenus ilicifolia*)

Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Aerial Parts Paraguay	Toxicity Assessment (quantitative)	Benzene Ext	IP Rat	LD50 = 0.10 gm/kg			X00017
Aerial Parts Paraguay	Toxicity Assessment (quantitative)	Benzene Ext	Oral Rat	LD50 = 1 gm/kg			X00017
Aerial Parts Paraguay	Toxicity Assessment (quantitative)	Hot H2O Ext	Oral Rat	LD50 > 1 gm/kg	Inactive		X00017
Aerial Parts Paraguay	Toxicity Assessment (quantitative)	MEOH Ext	IP Rat	LD50 = 0.86 gm/kg			X00017
Aerial Parts Paraguay	Toxicity Assessment (quantitative)	MEOH Ext	Oral Rat	LD50 > 1 gm/kg	Inactive		X00017
Leaf Brazil	Toxic Effect (general)	H2O Ext	Intragastric Mice	1.09 gm/kg	Inactive	LD-50 was greater than given dose.	T16416
Leaf Brazil	Toxic Effect (general)	H2O Ext	Intragastric Mice	272.0 mg/kg	Inactive	Dose given daily for 8 weeks with no toxicity noted.	T16416
Flowers Brazil	Mutagenic Activity	Hot H2O Ext	Agar Plate	100.0 mg/plate	Inactive	<i>Salmonella typhimurium</i> Metabolic activation has no effect on the results.	M28328
Leaf Brazil	Mutagenic Activity	H2O Ext	Agar Plate	100.0 mg/plate	Inactive	<i>Salmonella typhimurium</i>	J12611
Leaf Brazil	Barbiturate Potentiation	Hot H2O Ext	Intragastric Mice	1.36 gm/kg	Inactive		T16416
Leaf Brazil	Barbiturate Potentiation	Hot H2O Ext	IP Mice	680 mg/kg	Active		T16416
Leaf Brail	Cytotoxic Activity Anleukemic Activity	Fraction: maytansine	IP Mice	Not stated	Active	P388 lymphocytic leukemia L1210 mouse leukemia Human Lewis lung carcinoma system and the human B-16 melanocarcinoma (Statistical data in report indicating significant results.)	AD1024
Rootbark Japan	Cytotoxic Activity	MEOH Ext	Cell Culture	50.0 mcg/ml	Weak Activity	CA-9KB (32% Inhibition)	K27314

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Rootbark Paraguay	Cytotoxic Activity	MEOH Ext	Cell Culture	Not stated	Active	LEUK-P388 CA-9KB Cells-hamster-chinese-V79	H07261
Leaf + Stem Uruguay	Cytotoxic Activity	ETOH-H2O(1:1) Ext	Cell Culture	ED50<20 mcg/ml	Active	CA-9KB	X00001
Leaf Uruguay	Anticrustacean Activity	Hot H2O Ext	Cell Culture	0.1%	Active	<i>Artemia salina</i> (Assay system is intended to predict for antitumor activity.)	K18125
Leaf Brazil	Antiulcer Activity	Hot H2O Ext	Intragastric Rat	136.0 mg/kg	Active	vs. indomethacin-induced ulcers.	T16484
Leaf Brazil	Antiulcer Activity	Hot H2O Ext	Intragastric Rat	340.0 mg/kg	Active	vs. indomethacin-induced ulcers.	T16484
Leaf Brazil	Antiulcer Activity	Hot H2O Ext	IP Rat	340.0 mg/kg	Active	vs. indomethacin-induced ulcers.	T16484
Leaf Brazil	Antiulcer Activity	Hot H2O Ext	IP Rat	85.0 mg/kg	Active	vs. cold-restraint stress induced ulcers.	T16484
Leaf Brazil	Gastric Secretory Stimulation	Hot H2O Ext	Intragastric Rat	85.0 mg/kg	Active	Volume and pH of gastric secretions were both increased.	T16484
Leaf Not Stated	Antiulcer Activity	Chromatographic Fraction	Intragastric Rat	125.0 mg/kg	Active	Biological activity reported has been patented. vs. HCL / ethanol-induced gastric ulcers.	L08628
Leaf Brazil	Miscellaneous Effects	Not stated	Cell Culture Blood	30 mg/ml	Active	Decreased uptake of radioactivity on the labeling of red blood cells.	L11341
Leaf Brazil	Tranquilizing Effect	H2O Ext	Intragastric Mice	1.2 gm/kg	Inactive	In Rotarod test.	T16416
Leaf Brazil	Tranquilizing Effect	H2O Ext	Intragastric Mice	1.36 gm/kg	Inactive		T16416
Leaf Brazil	Tranquilizing Effect	H2O Ext	IP Mice	170 mg/kg	Active		T16416
Leaf Brazil	Analgesic Activity	Hot H2O Ext	Intragastric mice	1.36 gm/kg	Inactive	In hot plate test and acetic acid-abdominal writhing test.	T16416

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Leaf Brazil	Angiotensin-converting enzyme inhibition	Decoction	Rabbit	0.33 mg/ml	Equivocal	Lung	L11096
Leaf Brazil	Anticonvulsant Activity	Hot H2O Ext	Intragastric mice	1.36 gm/kg	Inactive	vs. transcorneal electroshock - induced convulsions.	T16416
Leaf Brazil	Anticonvulsant Activity	Hot H2O Ext	Intragastric mice	1.36 gm/kg	Inactive	vs. pentylenetetrazole-induced convulsions.	T16416
Leaf Argentina	Antibacterial Activity	Decoction	Agar Plate	Not stated	Inactive	<i>Pseudomonas aeruginosa</i>	K17523
Leaf Argentina	Antibacterial Activity	H2O Ext	Agar Plate	1.0 mg/ml	Inactive	<i>Salmonella typhi</i>	J11153
Leaf Argentina	Antibacterial Activity	H2O Ext	Agar Plate	62.5 mg/ml	Inactive	<i>Escherichia coli</i> <i>Staphylococcus aureus</i>	K14683
Leaf Argentina	Antifungal Activity	H2O Ext	Agar Plate	62.5 mg/ml	Inactive	<i>Aspergillus niger</i>	K14683
Leaf Brazil	Fertility Promotion Effect	Hot H2O Ext	Intragastric Mice (female)	544 mg/kg	Inactive	Dose given daily for 45 days preceding mating.	T16416
Leaf Brazil	Antispermatogetic Effect	ETOH(95%) Ext	Intragastric mice IP Mice	800 mg/kg 200 mg/kg	Inactive Inactive		J15847
Leaf Brazil	Teratogenic Activity	H2O Ext	Intragastric Mice	272.0 mg/kg	Inactive	Dose given daily during pregnancy.	T16416
Leaf + Twigs Paraguay	Abortifacient Effect	CHCL3 Ext	IP Rat (pregnant)	25.0 mg/kg	Inactive		T02289
Leaf + Twigs Paraguay	Abortifacient Effect	H2O Ext	IP Rat (pregnant)	100 mg/kg	Inactive		T02289
Leaf + Twigs Paraguay	Antiimplantation Effect	CHCL3 Ext	IP Rat (female)	25.0 mg/kg	Inactive		T02289
Leaf + Twigs Paraguay	Antiimplantation Effect	H2O Ext	IP Rat (female)	100.0 mg/kg	Active		T02289
Leaf + Twigs Paraguay	Antiimplantation Effect	Pet Ether Ext	IP Rat (female)	25.0 mg/kg	Inactive		T02289
Leaf + Twigs Paraguay	Embryotoxic Effect	CHCL3 Ext	IP Rat (pregnant)	25.0 mg/kg	Inactive		T02289
Leaf + Twigs Paraguay	Embryotoxic Effect	H2O Ext	IP Rat (pregnant)	100.0 mg/kg	Inactive		T02289

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Leaf + Twigs Paraguay	Embryotoxic Effect	Pet Ether Ext	IP Rat (pregnant)	25.0 mg/kg	Inactive		T02289
Leaf + Twigs Paraguay	Estrous Cycle Disruption Effect	CHCL3 Ext Pet Ether Ext	IP Rat (female)	25.0 mg/kg	Inactive		T02289
Leaf + Twigs Paraguay	Estrous Cycle Disruption Effect	H2O Ext	IP Rat (female)	100.0 mg/kg	Inactive		T02289
Leaf + Twigs Paraguay	Fertilization Inhibition	CHCL3 Ext Pet Ether Ext	IP Rat (female)	25.0 mg/kg	Inactive		T02289
Leaf + Twigs Paraguay	Fertilization Inhibition	H2O Ext	IP Rat (female)	100.0 mg/kg	Active		T02289
Leaf + Twigs Paraguay	Ovulation Inhibition Effect	CHCL3 Ext Pet Ether Ext	IP Rat (female)	25.0 mg/kg	Inactive		T02289
Leaf + Twigs Paraguay	Ovulation Inhibition Effect	H2O Ext	IP Rat (female)	100.0 mg/kg	Inactive		T02289
Not Stated Brazil	Antioxidant Activity	Saline Ext	Agar Plate	5.0 mg/ml	Weak Activity	vs. stannous chloride oxidative damage	L17930
Fruit Paraguay	Contraceptive and/or Interceptive Effect	MEOH(85%) Ext	Not stated Hamster	Not stated	Inactive		L18021
Leaf Paraguay	Contraceptive and/or interceptive effect	MEOH(85%) Ext	Not stated Hamster	Not stated	Inactive		L18021
Root Paraguay	Contraceptive and/or Interceptive Effect	MEOH(85%) Ext	Not stated Hamster	Not stated	Inactive		L18021
Leaf Uruguay	Plant Root Growth Inhibition	Hot H2O Ext	On plant	5.0%	Active	Assayed in <i>Triticum aestivum</i>	K18125
Leaf Uruguay	Plant Root Growth Stimulant	Hot H2O Ext	On plant	0.5%	Weak Activity	Assayed in <i>Triticum aestivum</i>	K18125
Leaf Brazil	Antifertility Effect	Lyophilized Hydroalcoholic Ext	Oral Mice	1000 mg/kg		Extract caused pre-implantation embryonic loss but had no effect on implantation or organogenesis..	AD1004

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Leaf Brazil	Embryotoxic Effect	Lyophilized Hydroalcoholic Ext	Mice Oral	1000 mg/kg	Inactive		AD1004
Leaf Brazil	Estrogenic Effect	Lyophilized Hydroalcoholic Ext	Mice Oral	1000 mg/kg	Active		AD1004

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Biological Activities of Compounds found in Espinheira Santa

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Celastrol	Anti-inflammatory Activity	In vitro	Not Stated	Active	Suppressed pro-inflammatory cytokine production TNF-alpha and IL-1beta by human monocytes and macrophages. Decreased induced nitric oxide production.	AD1006
Celastrol	Anti-inflammatory Activity	Rat	Not Stated	Active	Suppressed adjuvant arthritis.	AD1006
Celastrol	Antineurodegenerative Effect	Rat	Not Stated	Active	Improved performance in memory, learning and psychomotor activity tests. Useful in neurodegenerative inflammatory diseases like Alzheimer's disease.	AD1006
Celastrol	Immunomodulator Activity	In vitro	Not Stated	Active	Decreased the induced expression of class II MHC molecules.	AD1006
Celastrol Pristimerin	Antimalarial Activity	In vitro	Not Stated	Active		AD1007
Celastrol Pristimerin	Cytotoxic Activity	Cell culture	Not Stated	Active	HT-29 cells	AD1007
Celastrol	Antispermatogenic Effect	Cell Culture	Not Stated	Active	Concentration dependent inhibition on sperm forward motility, capacitation, acrosome reaction and sperm penetration.	AD1008
Celastrol	Antiperoxidative Activity	In vitro	Not Stated	Active	Prevented oxygen free radical damage to the inner membrane by increasing its negative surface charge.	AD1009
Celastrol	Antiperoxidative Activity	Cell culture	IC50=7 mM	Active	Antiperoxidative effect 15 times more effective than vitamin E.	AD1010
Friedelin	Antifungal Activity	Agar Plate	Not Stated	Inactive		AD1011
Friedelin	Antibacterial Activity	Agar Plate	Not Stated	Active Inactive	Gram negative bacteria Vibrio parahaemolyticus	AD1011
Friedelin	Antibacterial Activity	Agar Plate	Not Stated	Active		AD1011

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Friedelin	Antibacterial Activity	Agar Plate	Not Stated	Active	Concentration Dependent	AD1012
Friedelin	Cytotoxic Effect	Cell Culture	Not Stated	Weak activity	Reduced the cytotoxicity of cadmium on HepG2 cells.	AD1013
Maytanprine	Antimicrotubule Effect	Cell Culture	Not Stated	Active	Induced neurofibrillary tangles in cultured newborn mouse neurons.	AD1014
Maytenin	Antineoplastic Activity	Human Adult Topical	Not Stated	Active	Cellular carcinoma (skin) Kaposi's sarcomatosis	AD1015
Pristimerin	Immunomodulator Activity	Cell Culture	2 mg/ml	Weak Activity	Modulates the oxidative burst by macrophages	AD1016
Pristimerin	Insecticidal Activity	Codling moth	Not Stated	Active	Cydia pomonella, Lepidoptera: Tortricidae Antifeedant activity and molt suppression.	AD1017
Pristimerin	Anti-inflammatory Activity	In vitro	IC50=0.2-0.3 mM	Active	Reduced nitrite accumulation in LPS-stimulated macrophages. Reduced induction of nitric oxide synthase activity. Inhibited Nfkappa-B activation.	AD1018
Salaspermic acid	Antiviral activity	Cell Culture	Not Stated	Active	Inhibited HIV reverse transcriptase and HIV replication in H9 lymphocyte cells.	AD1022
Tingenone	Antitypanosomal Activity	Agar Plate	30 mm	Active	Trypanosoma cruzi Crithidia fasciculata	AD1023

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