

Biological Activities for Extracts of Mutamba (*Guazuma ulmifolia*)

IN VIVO RESEARCH

Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Results	Notes/Organism tested	Ref #
Bark Brazil	Uterine Stimulant Effect	ETOH (95%) Ext H2O Ext	Rat Female Rat Female	1:1 1:1	Active Weak Activity	Uterus (non-preg).	W02690
Stembark Brazil	Uterine Stimulant Effect	H2O Ext	Rat Female	Not stated	Active	Uterus (estrog).	A03531
Leaf Mexico	Antihyperglycemic Activity	Decoction	Intragastric Rabbit	4.0 mg/kg	Active	vs. glucose-induced hyperglycemia.	L03570
Leaf Belize	Antispasmodic Activity	Hot H2O Ext	Rat Aorta	300.0 mcl	Inactive	vs. norepinephrine- and carbachol-induced contractions.	L16245
Bark Belize	Antispasmodic Activity	Hot H2O Ext	Rat Aorta	300.0 mcl	Inactive	vs. norepinephrine- and carbachol-induced contractions.	L16245
Bark Brazil	Smooth Muscle Relaxant Activity	ETOH (95%) Ext H2O Ext	Rabbit Rabbit	1:1 1:1	Weak Activity	Duodenum	W02690
Bark Brazil	Smooth Muscle Relaxant Activity	H2O Ext	Guinea Pig	1:1	Equivocal	Ileum	W02690
Bark Brazil	Smooth Muscle Stimulant Activity	ETOH (95%) Ext	Guinea Pig	1:1	Equivocal	Ileum	W02690
Bark Brazil	Cardiac Depressant Activity	ETOH (95%) Ext H2O Ext	Insect (heart) Insect (heart)	1:1 1:1	Inactive Equivocal	Heart - <i>Thermobia domes</i>	W02690
Bark Brazil	Cardiotonic Activity	ETOH (95%) Ext	Insect (heart)	1:1	Equivocal	Heart - <i>Thermobia domes</i>	W02690
Leaf Guatemala	Diuretic Activity	Decoction	Gastric Rat	1.0 gm/kg	Inactive		T15295
Bark Brazil	Fish Poison	ETOH (95%) Ext H2O Ext	Not stated	1:1 1:1	Inactive Inactive		W02690
Bark Brazil	Hypertensive Activity	ETOH (95%) Ext	IV Cat	Not stated	Inactive		W02690
Bark Brazil	Hypotensive Activity	H2O Ext ETOH (95%) Ext	IV Cat IV Cat	Not stated Not stated	Active Inactive		W02690

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Stembark Mexico	Antisecretory Effect	ETOH(70%) Ext	Pig (intestine)	400.0 mcg/ml	Inactive	vs. PBE2-induced chloride secretion.	K23487
Stembark Mexico	Antisecretory Effect	ETOH(70%) Ext	Rabbit (intestine)	40.0 mcg/ml	Active	vs. cholera toxin-induced chloride secretion.	K23487
Stembark Mexico	Antisecretory Effect	ETOH (95%) Ext	Rabbit (colon)	Not stated	Active	vs. cholera toxin-induced secretion.	H18875

IN VITRO RESEARCH

Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Results	Notes/Organism tested	Ref #
Leaf Brazil	Cytotoxic Activity	ETOH (95%) Ext	Cell Culture	Not stated	Strong Activity	Ca-9kb 97.3% inhibition of cell growth.	M25036
Leaf Panama	Cytotoxic Activity	H2O Ext MEOH Ext	Cell Culture	100.0 mcg/ml	Inactive	Cells - vero.	K28424
Root Brazil Stem Brazil	Cytotoxic Activity	ETOH (95%) Ext	Cell Culture	Not stated	Inactive	Ca-9kb (19.9% inhibition of cell growth).	M25036
Leaf Indonesia	Prostaglandin Synthetase Inhibition	ETOH-H2O (1:1) Ext		750.0 mcg/ml	Active	Activity was inhibited 61.8%.	M31096
Bark Mexico	Anti-inflammatory Activity	ETOH (95%) Ext		Not stated	Equivocal	In HET-CAM assay.	L07398
Bark + Fruit Mexico	Antifungal Activity	ETOH (95%) Ext	Agar Plate	10.0 mcg 25.0 mcg	Active Active	<i>Cladosporium cucumerinum</i> <i>Penicillium oxalicum</i>	K19153
Leaf + Stem India	Antifungal Activity	H2O Ext	Agar Plate	100.0 Mcg	Inactive	<i>Aspergillus flavus</i> <i>Geotrichum candidum</i>	M19808
Leaf + Stem India	Antiyeast Activity	H2O Ext	Agar Plate	100.0 Mcg	Inactive	<i>Candida albicans</i>	M19808
Shade Fruit Mexico	Antiyeast Activity	MEOH Ext	Agar Plate	1.25 Mg/ml	Inactive	<i>Candida albicans</i>	J12454
Leaf Panama	Antiviral Activity	H2O Ext MEOH Ext	Agar Plate Agar Plate	100.0 mcg/ml 100.0 mcg/ml	Inactive Weak Activity	Virus-herpes simplex 1	K28424
Bark Brazil	Antibacterial Activity	CH2CL2:MEOH (1:1) Ext	Agar plate	5 mg/plate	Strong Activity	<i>Staphylococcusa aureus</i>	BB1006

Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Results	Notes/Organism tested	Ref #
Bark Brazil	Antibacterial Activity	CH ₂ CL ₂ :MEOH (1:1) Ext	Agar plate	5 mg/plate	Active	<i>Bacillus cereus</i>	BB1006
Leaf Guatemala	Antibacterial Activity	ETOH Ext	Agar Plate	10.0 mcl 30.0 mcl 30.0 mcl	Active Active Active	<i>Bacillus subtilis</i> <i>Escherichia coli</i> <i>Staphylococcusa aureus</i>	T15445
Bark + Fruit Mexico	Antibacterial Activity	ETOH (95%) Ext	Agar Plate	10.0 mcg 20.0 mcg 20.0 mcg	Active Active Inactive	<i>Bacillus subtilis</i> <i>Micrococcus luteus</i> <i>Escherichia coli</i>	K19153
Bark Guatemala	Antibacterial Activity	ETOH-H ₂ O (1:1) Ext	Agar Plate	50.0 mcl	Active	<i>Neisseria gonorrhoea</i>	K27236
Bark Guatemala	Antibacterial Activity	ETOH-H ₂ O (50%) Ext	Agar Plate	50.0 mcl	Active Equivocal Inactive Inactive Inactive	<i>Shigella dysenteriae</i> <i>Salmonella typhosa</i> <i>Shigella flexneri</i> <i>Escherichia coli</i> <i>Salmonella enteritidis</i>	K24899
Leaf Guatemala	Antibacterial Activity	Acetone Ext	Agar Plate	50.0 mg	Weak Activity	<i>Staphylococcus aureus</i> <i>Streptococcus pneumoniae</i> <i>Streptococcus pyogenes</i>	K19264
Leaf Guatemala	Antibacterial Activity	Hexane Ext	Agar Plate	50.0 mg	Weak Activity	<i>Staphylococcus aureus</i> <i>Streptococcus pneumoniae</i> <i>Streptococcus pyogenes</i>	K19264
Leaf Guatemala	Antibacterial Activity	MEOH Ext	Agar Plate	50.0 mg	Weak Activity	<i>Staphylococcus aureus</i> <i>Streptococcus pneumoniae</i> <i>Streptococcus pyogenes</i>	K19264
Leaf Guatemala	Antibacterial Activity	MEOH Ext	Agar Plate	Not stated	Equivocal	<i>Escherichia coli</i> <i>Salmonella typhimurium</i> <i>Shigella flexneri</i>	K11657
Leaf Guatemala	Antibacterial Activity	ETOH Ext	Agar Plate	0.1 ml	Inactive	<i>Proteus vulgaris</i> <i>Pseudomonas aeruginosa</i> <i>Salmonella typhi</i> <i>Shigella flexneri</i> <i>Streptococcus pyogenes</i>	T15445
Shade Fruit Mexico	Antibacterial Activity	MEOH Ext	Agar Plate	10.0 mg/ml	Inactive	<i>Staphylococcus aureus</i> <i>Escherichia coli</i> <i>Pseudomonas aeruginosa</i>	J12454

Plant Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Results	Notes/Organism tested	Ref #
Leaf + Stem India	Antibacterial Activity	H2O Ext	Agar Plate	100.0 mcg	Inactive	<i>Bacillus megaterium</i> <i>Bacillus subtilis</i> <i>Escherichia coli</i> <i>Pseudomonas sp</i> <i>Staphylococcus aureus</i> <i>Streptococcus sobrinus</i> <i>Xanthomonas rryzae</i>	M19808
Bark Mexico	Transcription Inhibition	ETOH (95%) Ext	Cell Culture	100.0 mcg/ml	Inactive	Ca-HeLa vs. inhibited NF-kappa B activation.	L07398
Bark Panama	Radioligand-Receptor-Binding Inhibition Activity	Acetone Ext	Cell Culture (hamster ovary cells)	10.0 mcg/ml	Active	Inhibited binding to Angiotensin II receptor cells by more than 50%.	L12353
Bark Panama	Radioligand-Receptor-Binding Inhibition Activity	CHCL3 Ext ETOAC Ext H2O Ext Hexane Ext MEOH-CH2CL2 (1:1) Ext		10.0 mcg/ml	Inactive	AT-1 Receptor Inhibition	L18181
Bark Panama	Radioligand-Receptor-Binding Inhibition Activity	H2O Ext		1000 mcg/ml	Weak Activity	AT-1 Receptor Inhibition	L18181
Bark Panama	Radioligand-Receptor-Binding Inhibition Activity	ETOH (80%) Ext		100.0 mcg/ml	Inactive	ET-A Receptor Inhibition	L18181
Bark Panama	Radioligand-Receptor-Binding Inhibition Activity	CHCL2 Ext ETOAC Ext H2O Ext MEOH-CH2Cl2 (1:1) Ext		10.0 mcg/ml	Inactive	Y-1 Receptor Inhibition	L18181
Bark Panama	Radioligand-Receptor-Binding Inhibition Activity	Hexane Ext		10.0 mcg/ml	Weak Activity	Y-1 Receptor Inhibition	L18181
Bark + Fruit Mexico	Antiamebic Activity	ETOH (95%) Ext		MIC > 250 mcg/ml	Inactive	<i>Entamoeba histolytica</i>	K19153
Fresh Fruit + Leaf India	Antifilarial Activity	Not stated		Not stated	Inactive	<i>Setaria gigitata</i> (worm)	M25236
Trunkbark Brazil	Molluscicidal Activity	ETOH (95%) Ext H2O Ext		1000 ppm	Weak Activity	<i>Biomphalaria glabrata</i> <i>Biomphalaria straminea</i>	W02949
Bark Not stated	Plant Germination Inhibition	MEOH Ext	Plant	50.0 ppm	Active	Tested on bean plants.	T09735

Biological Activities for Compounds found in Mutamba (*Guazuma ulmifolia*)

Compound	Activity Tested For	Test Model	Dosage	Results	Notes/Organism tested	Ref #
Procyanidin B-2	Antitumor Activity	Cell Culture	Not stated	Active	Inhibited 12-O-tetradecanoylphorbol-13-acetate-induced activation of epstein-barr virus early antigen in Raji cells.	AG1009
Procyanidin B-2	Antitumor Activity	Cell Culture	ED50=1-4 mcg/ml	Active	PRMI-7951 melanoma cells.	AG1021
Procyanidin B-2	Antitumor Activity	Cell Culture	ED50=1-4 mcg/ml	Inactive	Lung carcinoma (A-549). Ileocecal adenocarcinoma (HCT-8). Epidermoid carcinoma of nasopharynx (KB). Medulloblastoma (TE-671) .	AG1021
Procyanidin B-2	Mutagenic Effect	Cell Culture	Not stated	Inactive	Bacteria	AG1015
Procyanidin B-2	Toxic Effect	CHL cells	Not stated	Inactive	Caused no structural aberrations	AG1015
Procyanidin B-2	Toxic Effect	Mice	Not stated	Inactive	Micronucleus test.	AG1015
Procyanidin B-2	Toxic Effect	SC Rat	LD >2gm/kg	Inactive		AG1015
Procyanidin B-2	Toxic Effect	Guinea Pig	Not stated	Inactive	No sensitization.	AG1015
Procyanidin B-2	Toxic Effect	Rabbits	Not stated	Weakly Active	Slight irritation of conjunctiva, thought to be caused by ethanol.	AG1015
Procyanidin B-2	Toxic Effect	Rabbits	Not stated	Inactive	No primary irritation.	AG1015
Procyanidin B-2	Hair Growth Promoter Effect	Cell Culture	Not stated	Active	Down regulates protein kinase C (PKC) isozymes (-alpha, -beta1, -beta2, -eta) in hair cells, promoting hair cell growth. Inhibition of PKC isozyme translocation to the particulate fraction of hair epithelial cells.	AG1010
Procyanidin B-2	Hair Growth Promoter Effect	Human Adult (male)	1% External	Active	No adverse effects. 78.9% had increase in hair diameter (30% in placebo) and an increase in number of total hairs.	AG1011
Procyanidin B-2	Neuroprotective Effect	Cell Culture	100-300 mM	Active	Protected against glutamate-induced neuronal death in cultured cerebellar granule cells by inhibition of calcium influx.	AG1012
Procyanidin B-2	Hair growth promoter Effect	Human Adult (male)	1% External	Active	Increase in number of total hairs and terminal hairs (hairs more than 60 mm in diameter).	AG1013

Compound	Activity Tested For	Test Model	Dosage	Results	Notes/Organism tested	Ref #
Procyanidin B-2	Protein Kinase C Inhibitory Activity	Not stated	Not stated	Active		AG1014
Procyanidin B-2	Hair growth promoter Effect	in vitro in vivo	Not stated Not stated	Active Active	Promote hair epithelial cell proliferation and stimulate anagen induction.	AG1014
Procyanidin B-2	Hair growth promoter Effect	Mouse	Not stated	Active	Growth-promoting activity 300% (controls 100%).	AG1016
Procyanidin B-2	Antihypertensive Effect	IV Rat	Not stated	Active	Lowered blood pressure through decrease of sympathetic tone and direct vasodilatation.	AG1017
Procyanidin C-1	Hair growth promoter Effect	Mouse	Not stated	Active	Growth-promoting activity 220%.	AG1016
Procyanidin C-1	Anticoagulant Activity	In vitro	Not stated	Active	Inhibited platelet aggregation. Comparable with aspirin.	AG1019
Procyanidin C-1	Antiviral Activity	Cell Culture	Not stated	Active	<i>Herpes simplex</i> virus type 1.	AG1020
Procyanidin C-1	Protein Kinase C Inhibitory Activity	Not stated	Not stated	Active		AG1014
Procyanidin C-1	Hair growth promoter Effect	In vitro In vivo	Not stated Not stated	Active Active	Promote hair epithelial cell proliferation Stimulate anagen induction.	AG1014
Procyanidin C-1	Antioxidant Activity		Not stated	Active	Lipid peroxidation and hydroxyl radical scavenging assay.	AG1020

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