

Biological Activities for Extracts of Copaiba (*Copaifera officinalis*)

Part - Origin	Activity Tested For	Type	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Oleoresin Brazil	Wound Healing Activity	Oil	Topical Rat	4%	Active	Accelerated wound contraction in open wounds and increased the tensile strength in healing incised wounds.	BT1012
Oleoresin Brazil	Anti-inflammatory Activity	Oil	In vivo	Not Stated	Active	vs. bradykinin-induced edema formation. vs. carrageenan-induced edema formation.	BT1013
Oleoresin Brazil	Anti-ulcer Activity	Oil	Oral Rat	200 & 400 mg/kg	Active	vs. ethanol-induced gastric lesions. vs. indomethacin-induced gastric lesions. vs. restraint stress-induced gastric lesions.	BT1014
Oleoresin Brazil	Anti-ulcer Activity	Oil	Oral Rat	400 mg/kg	Active	In pylorus ligated rats the oleoresin enhanced the accumulation of gastric juice volume and mucus secretion while inhibiting total acidity.	BT1014
Oil Spain	Leishmanicidal Activity	Oil	In vitro	300 ug/ml	Weak Activity	20.1% inhibition of <i>Leishmania braziliensis</i> promastigotes.	BT1008

Biological Activities for Compounds of Copaiba (*Copaifera officinalis*)

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Kaurenoic acid	Embryotoxic Activity	Sea urchin embryos	IC50=44.7-84.2 uM	Active	Induced embryo destruction.	BT1009
Kaurenoic acid	Antifertility Activity	In vitro	58-374 mcg/ml	Active Weak Activity	Human sperm immobilization (50%). Killing of human sperm.	BT1011
Beta-bisabolene	Abortifacient Effect	Not stated	Not stated	Active		ZZ1022
Kaurenoic acid	Uterine Relaxant Activity	Rat Uterine Muscle	160 microM	Active	Uterine relaxant effect through calcium blockade and opening of ATP-sensitive potassium channels.	BT1015
Kaurenoic acid	Hemolytic Activity	In vitro	EC50=74 uM EC50=56.4 uM	Active Active	Hemolysis of mouse erythrocytes. Hemolysis of human erythrocytes.	BT1009

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Sesquiterpenes	Anti-inflammatory Activity	In vivo	Not Stated	Active	vs. bradykinin-induced edema formation. vs. carrageenan-induced edema formation.	BT1013
Caryophyllene	Anti-inflammatory Activity	Not stated	Not stated	Active		BT1025
Caryophyllene	Anti-inflammatory Activity	Not stated	IC50=100 uM	Active		BT1027
Copalic acid	Anti-inflammatory Activity	Rat	Not stated	Active	vs. carrageenin-induced pedal edema. Reduced granuloma formation and vascular permeability to intracutaneous histamine.	BT1028
Copalic acid	Antibacterial Activity	Agar Plate	MIC=6.3-3.1 ug/ml MIC=10-8 ug/ml MIC=5-4 ug/ml	Active	<i>B. subtilis</i> <i>S. aureus</i> <i>S. epidermidis</i>	BT1008
Kaurenic acid	Antibacterial Activity	Agar Plate	MIC=5-2.5 ug/ml MIC=8-6 ug/ml MIC=6-4 ug/ml	Active	<i>B. subtilis</i> <i>S. aureus</i> <i>S. epidermidis</i>	BT1008
Polyalthic acid	Antibacterial Activity	Agar Plate	MIC=30-20 ug/ml MIC=50-40 ug/ml MIC=40 ug/ml	Inactive	<i>B. subtilis</i> <i>S. aureus</i> <i>S. epidermidis</i>	BT1008
Methyl-18-hydroxy-copaiferolate	Antibacterial Activity	Agar Plate	MIC=30 ug/ml MIC=>50 ug/ml MIC=>50 ug/ml	Inactive	<i>B. subtilis</i> <i>S. aureus</i> <i>S. epidermidis</i>	BT1008
Kaurenoic acid	Antibacterial Activity	Agar Plate	Not Stated	Active Active Inactive Active	Gram-positive bacteria. <i>Bacillus cereus</i> <i>Salmonella typhi</i> <i>Escherichia coli</i>	BT1016
Caryophyllene	Antibacterial Activity	Not stated	Not stated	Active		BT1023
Caryophyllene	Antibacterial Activity	Not stated	Not stated	Active	<i>Staphylococcus</i> <i>Streptococci</i>	ZZ1022
Hardwickic acid	Antimicrobial Activity	Agar Plate	Not Stated	Active		BT1018
Kaurenoic acid	Antimicrobial Activity	In vitro	Not Stated	Active		BT1010

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Caryophyllene	Antifungal Activity	Not stated	Not stated	Active	<i>Candida albicans</i>	ZZ1022
Beta-bisabolene	Antiviral Activity	Not stated	IC50=1800 mcg	Active	<i>Rhinovirus</i>	BT1019
Kaurenoic acid	Antiparasitic Activity	In vitro	Not Stated	Active		BT1010
Copalic acid Methyl copalate Agathic acid 15-methyl ester Polyalthic acid Methylpolyalthate Pinifolic acid Methyl-18-hydroxy-copaiferolate Kaurenic acid 16beta-kauran-19-oic acid	Leishmanicidal Activity	In vitro	IC50=100 ug/ml	Inactive	<i>Leishmania braziliensis</i>	BT1008
Caryophyllene	Anticarcinogenic Activity	Not stated	MIC=1600 mcg/ml	Active		BT1022
Caryophyllene	Antitumor Activity	Not stated	Not stated	Active		BT1021
Kolavenol	Antitumor Activity	Mice	41 mg/kg	Active	IMC carcinoma (murine tumor). Effect was twice that of 5-FU.	BT1007
Methyl copalate	Cytotoxic Activity	In vitro	IC50=2.5 ug/ml IC50=5 ug/ml IC50=5 ug/ml IC50=10 ug/ml	Active	P-388 lymphoid neoplasm mouse. A-549 human lung carcinoma. HT-29 human colon carcinoma. MEL-28 human melanoma.	BT1008
Copalic acid Polyalthic acid Pinifolic acid Kaurenic acid 16beta-kauran-19-oic acid	Cytotoxic Activity	In vitro	IC50=>10 ug/ml	Inactive	P-388 lymphoid neoplasm mouse. A-549 human lung carcinoma. HT-29 human colon carcinoma. MEL-28 human melanoma.	BT1008
Kaurenoic acid	Antileukemic Activity	Cell Culture	Not Stated	Active	CEM leukemic cells. 95% inhibition.	BT1009
Kaurenoic acid	Cytostatic Activity	Cell Culture	Not Stated	Active	45% inhibition of growth of MCF-7 breast and HCT-8 colon cancer cells.	BT1009
Caryophyllene	Antiulcer Activity	Oral Rat	Not stated	Active	Inhibited gastric mucosal injury by ETOH and HCl.	BT1025
Beta-bisabolene	Antiulcer Activity	Not stated	IC50=100 mg/kg	Active		BT1020

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Caryophyllene	Anti-asthmatic Activity	Not stated	Not stated	Active		BT1026
Caryophyllene	Antiacne Activity	Not stated	Not stated	Active		ZZ1022
Caryophyllene	Aldose-Reductase Inhibitory Activity	Not stated	Not stated	Active		ZZ1022
Pinifolic acid	Aldose Reductase Inhibitory Activity	In vitro	IC50=25 ug/ml	Weak Activity		BT1008
Caryophyllene	Antiedemic Activity	Not stated	Not stated	Active		BT1027
Caryophyllene	Sedative Effect	Not stated	Not stated	Active		ZZ1022
Caryophyllene	Glutathione-S-transferase Induction	Mouse	Not stated	Active	Liver & small intestine.	BT1021
Caryophyllene	Antifeedant Activity	Not stated	500 ppm	Active		BT1024

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