

## Biological Activities for Extracts of Samambaia (*Polypodium decumanum*)

Part – Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Not stated	Toxicity (general)	Not stated	Oral Human Adult	80 mg-720 mg	Active	2 patients with side effects (pruritis and gastric disturbance) out of 316 total patients observed.	AW1002
Leaf + Rhizome Not stated	Toxicity (general)	Not stated	Oral Human Adult	>1000 mg	Inactive		AW1016
Aerial Part Not stated	Toxicity (general)	H2O-ETOH Ext	Oral Rat Oral Mice	250 mg/kg 1000 mg/kg	Inactive Inactive		AW1020
Leaf + Rhizome Not stated	Drug Interaction	Not stated	Oral Human Adult	Not stated	Active	Appears to enhance the effect of digitalis.	AW1016
Leaf + Rhizome Not stated	Drug Interaction	Not stated	Oral Human Adult	Not stated	Active	Antacids reduce the absorption of samambaia.	AW1016
Leaf Honduras	Immunomodulating Activity	MEOH Ext	IG Mouse SC Mouse	1000 mg/kg 500.0 mg/kg	Active Active	Treatment enhanced allograft survival time.	M29265
Rhizome Spain	Immunomodulating Activity	Not stated	Not stated	Not stated	Active  Active	Stimulates the proliferation and activation of T and natural killer lymphocytes. Down-regulates adhesion molecules CD11, CD18 and CD62-L on PBMN cells and on U-937 and HL-60 cell lines.	AW1003
Not stated	Immunomodulating Activity	Not stated	Cell Culture	Not stated	Active	Inhibited the production of Th1 cytokines - IL-2 (24%), IFN-gamma (72%) and TNF-alpha (53%). Increased Th2 cytokine IL-10 (33%). 100% inhibition of IL-6.	AW1005
Rhizome Guatemala	Immunomodulating Activity	Not stated	In vitro	Not stated	Active	Modulates the production and release of cytokines by PBMN cells.	AW1012
Rhizome Honduras	Immunomodulating Activity	Not stated	Oral Human Adult	Not stated	Active	The number of T8+ lymphocytes increased without affecting the number of T4+ lymphocytes or B cells.	AW1009

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Not stated	Immunomodulating Activity	Not stated	Mice	Not stated	Active	In mice immunized with <i>Trichinella spiralis</i> , from day 10 to day 1 prior to immunization treatment caused a significant reduction in total antibody levels, suppression of IgG1 response, increase of IgG2a and IgG2b and a potentiation of IgG3 response.	AW1010
Rhizome Guatemala	Immunomodulating Activity	Not stated	In vivo	Not stated	Active	Stimulates PBMN cell proliferation, delays IL-1 beta secretion and increased IL-2, IL-10 and INF-gamma secretion.	AW1012
Not stated	Immunomodulating Activity	Not stated	Oral Human Adult	Not stated	Active	Corrected imbalances between T4 helper cells and T8 suppressor cells. Increased low T8 cells.	AW1018
Leaf + Rhizome Not stated	Immunomodulating Activity	MEOH Ext	Cell Culture (PBMNc)	75 mu. g/ml 150 mu. g/ml 500 mu. g/ml 1000 mu. g/ml 1500 mu. g/ml 4500 mu. g/ml	Active	Increase in PHA-stimulated PBMN cells proliferation at 75-150 mu. g/ml. At doses of 1500-4500 mu. g/ml a decrease of proliferation was seen.	AW1014
Not stated	Anti-inflammatory Activity	Not stated	Topical Mice	Not stated	Active	Diminished mast cell infiltrate and blood vessels triggered by chronic UVB irradiation.	AW1005
Leaf Honduras	Anti-inflammatory Activity	MEOH Ext	Oral Rat Topical Rat	1000 mg/kg 400 mg	Active Active	vs. ear edema test. Both oral and topical resulted in a 32% decrease in edema.	AW1015
Leaf Honduras	Anti-inflammatory Activity	MEOH Ext	Oral Rat	500 mg/kg 1000 mg/kg 2000 mg/kg	Weak Activity Active Active	vs. paw edema test induced by carrageenan. 500 mg produced a 19% reduction in edema, 1000 mg a 22% inhibition and 2000 mg a 21% inhibition. Reduction in edema thought to be due to inhibition of PAF, which is involved in the early phase of carrageenan-induced edema.	AW1015
Leaf Honduras	Anti-inflammatory Activity	MEOH Ext	Oral Rat	Not stated	Inactive	Pre-treated rats showed no decrease in the edema formation when challenged with carrageenan on day 14.	AW1015
Not stated	Anti-inflammatory Activity	Not stated	Cell Culture	Not stated	Active	Inhibition of cyclooxygenase.	AW1015

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Not stated	Anti-inflammatory Activity Photo-protective Activity	Not stated	Topical or Oral Guinea pig Topical or Oral Human skin	Not stated	Active  Active	Inhibited UVB-induced erythral response and 8-methoxypsoralen plus UVA-induced phototoxic reaction.	AW1008
Fronde Honduras	Elastase Inhibition	MEOH Ext	Human Adult	IC50 = 0.1 mg/ml	Active	Mononuclear leukocytes vs. PAF-induced elastase release.	K08016
Fronde Honduras	Platelet Activating Factor Inhibition	MEOH Ext	Cell Culture	0.5 mg/ml	Active	Neutrophils—human vs. PAF-induced exocytosis.	J17352
Fronde Honduras	Platelet Activating Factor Inhibition	MEOH Ext	Human Adult	IC50 = 0.2 mg/ml	Active	PAF synthesis inhibited.	K08016
Fronde Honduras	Platelet Activating Factor Stimulation	MEOH Ext	Cell Culture	0.5 mg/ml	Active	Neutrophils—human.	J17352
Rhizome Honduras	Exocytosis Inhibition Platelet Activating Factor Stimulation	MEOH Ext	Cell Culture	0.5 mg/ml	Weak Activity	Neutrophils—human vs. PAF-induced exocytosis.	J17352
Fronde Honduras	Leukotriene B4 Release Enhancement	MEOH Ext	Cell Culture	0.8 mg/ml	Active	Leukocytes.	J17352
Rhizome Honduras	Leukotriene B4 Release Enhancement	MEOH Ext	Cell Culture	0.8 mg/ml	Weak Activity	Leukocytes.	J17352
Rhizome Honduras	Antipsoriatic Activity	H2O Ext	Oral Human Adult	80 mg - 720 mg	Active	In 304 patients 61.41% achieved whitenings (80-100%) between the affected skin. 46 patients had whitened between 30-80% of their lesions. 15 patients of 304 obtained no result. 11 had relapses.	AW1002
Rhizome Brazil	Antipsoriatic Activity	H2O Ext	Human Adult	Not stated	Active	Caused decreases in hyperkeratosis, parakeratosis, epidermal mitosis, epidermal thickening, epidermal prolongations and the severity and extent of epidermal lesions.	AW1016
Rhizome + Leaf	Antipsoriatic Activity	Calcium salt lyophilized Ext	Oral Human Adult	12 mg	Active	11 patients suffering from long-lasting resistant psoriasis experienced an improvement with 1 having a complete remission.	AW1020

Part – Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Rhizome Honduras	Atopic Dermatitis Reduction	H2O Ext	Oral Human Adult	Not stated	Active	Activity and extension of cutaneous lesions improved more markedly under <i>Polypodium</i> than with an oral antihistamine and topical steroids. Effect still seen months after treatment ceased. Returned abnormal immune parameters to normal.	AW1018
Rhizome Honduras	Collagen Normalization Effect	H2O Ext	Cell Culture	1-2 mcg	Active	A lower rotatory power of collagen fractions was seen in samples from arthritic and psoriatic patients. Values restored to normal upon treatment.	AW1020
Leaf + Rhizome Not stated	Antioxidant Activity	Not stated	In vitro	0.01%	Active	Quenched superoxide anions by 42.4% and 55%.	AW1016
Not stated Brazil	Antioxidant Activity	Not stated	Not stated	1x10 <sup>9</sup> M-1 s-1 0.2-1 mg/ml  1 mg/ml Not stated	Active Active  Active Inactive	Hydroxyl radicals scavenged. Quenched superoxide anions by 30 & 31% Quenched singlet oxygen by 43%. Hydrogen peroxide.	AW1004
Not stated	Antioxidant Enzyme Modification	H2O Ext	IP Rat	4 mg/kg 20 mg/kg 100 mg/kg	Active Active Active	In an animal model of neuronal degeneration low doses produced decreased SOD activity in the hypothalamus, hippocampus, liver and spleen, while an increase of SOD activity was seen in the cerebral cortex.	AW1006
Not stated	Anti-angiogenic Activity	Not stated	Mice	Not stated	Active	Inhibited angiogenesis.	AW1005
Not stated	Antitumor Activity	Not stated	In vitro In vivo	Not stated Not stated	Active Active		AW1017
Not stated	Antiproliferative Activity	ETOH Ext	Cell Culture	Not stated	Active	Inhibited the proliferation of PBMN cells in response to PHA or anti CD3 monoclonal antibodies.	AW1007
Not stated	Photoprotective Activity	Not stated	Topical Mice	Not stated	Active	Mice treated had a reduction in skinfold thickness, less histologic damage and a reduction in the number of skin tumors at 8 weeks after cessation of UVB exposure.	AW1011

Part – Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Leaf + Rhizome Not stated	Photoprotective Effect	Not stated	Topical Human Adult	10% 25% 50%	Active Active Active	Standard SPF 15 had a IPD=3.09. <i>Polypodium</i> had IPD=2.2-3.4. All doses retarded or prolonged the photo-oxidation reaction of melanin pigment.	AW1016
Leaf + Rhizome Not stated	Photoprotective Effect	Not stated	Topical Human Adult	10% 25% 50%	Active Active Active	Standard SPF 15 showed a SPF value of >2.94 for the minimum erythematic dose prevention. SPF values for <i>Polypodium</i> at 10% = 2.35, 25% = 2.71 and 50% = >2.94. Skin treated with <i>Polypodium</i> showed no visible sunburn reaction.	AW1016
Leaf + Rhizome Not stated	Photoprotective Effect	Not stated	Topical Human Adult	10% 25% 50%	Active Active Active	Protection factor for the minimal melanogenic dose of UV radiation required to stimulate delayed pigmentation or tanning for 10% was >147, 25% = >153, 50% = >167 and standard SPF 15 = >167 mJ/cm <sup>2</sup> .	AW1016
Leaf + Rhizome Not stated	Photoprotective Effect	Not stated	Oral Human Adult	720 mg	Active	Slightly better protection seen upon taking <i>Polypodium</i> 4 days before sun exposure and then 1 dose 3 hours before exposure than taking it 1 day and 3 hours before exposure. The skin of those treated showed no evidence of sunburn and delayed tanning reactions.	AW1016
Leaf + Rhizome Not stated	Photoprotective Effect	Not stated	Topical Human Adult  Oral Human Adult	10% 25% 50% 1440 mg	Active Active Active Active	Psoralen-induced photosensitivity. IPD=1.5-4.  IPD=3-7 J/cm <sup>2</sup>	AW1016
Leaf + Rhizome Not stated	Anti-cachexia Activity	H2O Ext	Oral Human Adult	Not stated	Active	Used for malnutrition, weight loss, wasting and cachectic syndrome in AIDS and cancer.	AW1013
Leaf + Rhizome Not stated	Anti-cachexia Activity	H2O Ext	Oral Human Adult	Syrup 1 gm Syrup 3 gm	Active Active	In 5 patients with advanced HIV infection body weight increased to normal figures in 3 and professional activity became normal at the end of the 2 <sup>nd</sup> month of treatment.	AW1013

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Leaf + Rhizome Not stated	Anti-cachexia Activity	H2O Ext	Oral Human Adult	Syrup 1 gm Syrup 3 gm	Active Active	In 5 patients with advanced HIV infection a rapid weight gain was seen with an improved quality of life and resumption of professional activities.	AW1013
Leaf + Rhizome Not stated	Neuroprotective Activity	Hydrosoluble Ext	Oral Human Adult	Not stated	Active	Produces hypoquinesia; improves the production in a training task and reduces IL-2 and IL-1beta in the cerebral crust and hippocampus while increasing cortical TNF-alpha.	AW1014
Leaf + Rhizome Not stated	Neuroprotective Activity	Hydrosoluble Ext	Oral Human Adult	300 mg	Active	In 24 patients with Alzheimer's disease and vascular dementia the cerebral bioelectrical activity showed attenuation of slow frequencies and activation of rapid frequencies.	AW1014
Not stated	CNS Effect	Not stated	Rat	Not stated	Active	Induced hypokinesia with no effect on psychomotor habituation; improved learning; decreased cytokines IL-1beta, IL-2 in frontoparietal cortices; decreased IL-1beta in hippocampus; increased TNF-alpha in cortex.	AW1019

## Biological Activities for Compounds of Samambaia (*Polypodium decumanum*)

Compound	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Flavonoid Fraction	Platelet Activating Factor (PAF) Inhibition	Cell Culture	Not stated	Inactive Active Active	PAF activity. Inhibited spontaneous elastase release. Inhibited the potentiation of elastase release by PAF.	H21205
1,2-di-O-palmitoyl-3-O-(6-sulpho-alpha-D-quinovopyranosyl)-glycerol	Platelet Activating Factor (PAF) Inhibition	Cell Culture	IC50=2 microM	Active	Displacement of PAF from its receptor.	H19746
Lipidic Fraction	Platelet Activating Factor (PAF) Inhibition	Cell Culture	IC50=10 mu.M	Active	Inhibited the exocytosis induced by PAF.	AW1015

Compound	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Adenosine	Platelet Activating Factor (PAF) Inhibition	Cell Culture	IC50=0.024 mcg/ml	Active	Inhibited the exocytosis induced by PAF.	K08016
Lipidic Fraction	Platelet Activating Factor (PAF) Antagonist Activity	Cell Culture	IC50=2 µM	Weak Activity	PAF receptor antagonism in the neutrophil seen.	AW1015
Selligieain	Elastase Inhibition	Cell Culture	Not stated	Active		H21205
PUFA's	Leukotriene Inhibition	Cell Culture	IC50=20-60 µM	Active	Inhibition of LTB4 formation.	K17243
Arachidonic acid	Leukotriene Inhibition	Cell Culture	Not stated	Inactive	Stimulation of LTB4 formation.	K17243
8(R) hydroxylinoleic acid	Leukotriene Inhibition	Cell Culture	IC50=120 µM	Active	30% inhibition.	K17243
Ricinoleic acid Oleic acid Elaidic acid Linoleic acid 8(R)-OH-linoleic acid Linolenic acid Eicosapentaenoic acid	Leukotriene B4 Inhibition	Cell Culture	IC50=41 µM IC50=21 µM IC50=54 µM IC50=31 µM Not stated IC50=42 µM IC50=57 µM	Active		AW1009
Lipidic Fraction	Antipsoriatic Activity	Not stated	Not stated	Active		AW1014

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