Extract from Mimosa pigra attenuates chronic experimental pulmonary hypertension

Titre	Extract from Mimosa pigra attenuates chronic experimental pulmonary hypertension
Type de publication	Article de revue
Auteur	Rakotomalala, Gilbertine [1], Agard, C. [2], Tonnerre, Pierre [3], Tesse, Angela [4], Derbré, Séverine [5], Michalet, Serge [6], Hamzaoui, J. [7], Rio, Marc [8], Cario-Toumaniantz, C. [9], Richomme, Pascal [10], Charreau, Béatrice [11], Loirand, Gervaise [12], Pacaud, Pierre [13]
Editeur	Elsevier
Type	Article scientifique dans une revue à comité de lecture
Année	2013
Date	2013/06/21
Numéro	1
Pagination	106 - 116
Volume	148
Titre de la revue	Journal of Ethnopharmacology
ISSN	0378-8741
Mots-clés	Anti-inflammatory [14], Anti-oxidant [15], Arterial [16], Artery [17], Endothelium [18]

Résumé en anglais	AbstractEthnopharmacological relevanceDifferent parts of Mimosa pigra (MPG) are used in traditional medicine in Madagascar, tropical Africa, South America and Indonesia for various troubles including cardiovascular disorders. Aim of the study To investigate the mechanisms underlying the vascular effects of MPG by assessing in vitro its antioxidant and anti-inflammatory properties, and its vascular relaxing effects, and in vivo, its action on hypoxic pulmonary hypertension (PAH) in rats. Material and methods The antioxidant activity of MPG leaf hydromethanolic extract was determined by using both the 1,1-diphenyl-2-picrylhydrazyl radical scavenging and the oxygen radical absorbance capacity in vitro assays. Anti-inflammatory properties were assayed on TNFα-induced VCAM-1 expression in endothelial cells. The vasorelaxant effect of MPG extract was studied on rat arterial rings pre-contracted with phenylephrine (1 μM) in the presence or absence of the endothelium. In vivo MPG extract effects were analyzed in chronic hypoxic PAH, obtained by housing male Wistar rats, orally treated or not with MPG extract (400 mg/kg/d), in a hypobaric chamber for 21 days. Results MPG leaf extract had antioxidant and anti-inflammatory properties. It induced endothelium-dependent, NO-mediated relaxation of rat aorta and pulmonary artery. In vivo, chronic MPG treatment reduced hypoxic PAH in rat by decreasing by 22.3% the pulmonary arterial pressure and by 20.0% and 23.9% the pulmonary artery and cardiac remodelling, respectively. This effect was associated with a restoration of endothelium function and a 2.3-fold increase in endothelial NO synthase phosphorylation. MPG leaf hydromethanolic extract contained tryptophan and flavonoids, including quercetin glycosides. Both compounds also efficiently limit hypoxia-induced PAH. Conclusions Our results show endothelial protective action of MPG leaf hydromethanolic extract which is likely to be due to its antioxidant action. MPG successfully attenuated the development of PAH, thus demonstrating the protective effect of MPG on cardiovascular diseases.
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DOI	10.1016/j.jep.2013.03.075 [20]
Lien vers le document	http://dx.doi.org/10.1016/j.jep.2013.03.075 [20]

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