COSMETICS/COSMECEUTICALS

NPARR, 6(1 & 2), 2015-11 Anti–elastase, anti–tyrosinase and matrix metalloproteinase–1 inhibitory activity of earthworm extracts as potential new anti–aging agent

To examine whether earthworms of Eisenia fetida, Lumbricus rubellus and Eudrilus eugeniae extracts have elastase, tyrosinase and matrix metalloproteinase-1 (MMP-1) inhibitory activity. The earthworms extract was screened for elastase, tyrosinase and MMP-1 inhibitory activity and compared with the positive controls. It was also evaluated for whitening and anti-wrinkle capacity. The extract showed significantly (P<0.05) good elastase and tyrosinase inhibition and excellent MMP-1 inhibition compared to N-Isobutyl-N-(4-methoxyphenylsulfonyl)-glycylhydroxamic acid. Earthworms extract showed effective inhibition of tyrosinase, elastase and MMP-1 activities. Therefore, this experiment further rationalizes the traditional use of this worm extracts which may be useful as an anti-wrinkle agent [Nurhazirah Azmi, Puziah Hashim*, Dzulkifly M Hashim, Normal Halimoon, Nik Muhamad and Nik Majid (Halal Products Research Institute, University Putra Malaysia, Putra Infoport, 43400 Upm Serdang, Selangor Darul Ehsan, Malaysia), Asian Pacific Journal of Tropical Biomedicine, 2014, 4(1), S348–S352].

NPARR, 6(1 & 2), 2015-12 Effects of topical application of patchouli alcohol on the UV-induced skin photoaging in mice

Ultraviolet (UV) irradiation, known to generate reactive oxygen species (ROS) excessively and elicit inflammatory response, is a potent inducer for skin photoaging. Overproduction of ROS in conjunction with the resulting inflammation stimulate the over-expression of matrix metalloproteinases (MMPs), which in turn causes degradation of extracellular matrix, leading finally to coarse wrinkling, dryness, and laxity of the skin. In this study, patchouli alcohol (PA, C_{13}H_{26}O), an active chemical ingredient reputed for free radical scavenging and anti-inflammatory properties, was investigated for its anti-photoaging action using a mouse model whose dorsal skin was depilated. The dorsal skin areas of six-week-old mice were smeared with PA solution or vehicle, followed by UV irradiation for nine consecutive weeks. Protective effects of PA were evaluated macroscopically and histologically, as well as by assaying the antioxidant enzymes (SOD, GSH-Px) activities, the contents of inflammatory factors (IL-10, IL-6, TNF-α), and the levels of MMP-1 and MMP-3. The findings amply demonstrated that PA significantly accelerated the recovery of the UV-induced skin lesions, evidently through anti-oxidant and anti-inflammatory action, as well as down-regulation of the MMP-1 and MMP-3 expression [Xue-Xuan Feng, Xiu-Ting Yu, Wen-Jie Li, Song-Zhi Kong, Yu-Hong Liu, Xie Zhang, Yan-Fang Xian, Xiao-Jun Zhang, Zi-Ren Su* and Zhi-Xiu (Linc School of Chinese Materia Medica, Guangzhou University of Chinese Medicine, Guangzhou, People’s Republic of China) European Journal of Pharmaceutical Sciences, 2014, 63, 113–123].

NPARR, 6(1 & 2), 2015-13 Inhibitory effect of galangin on atopic dermatitis-like skin lesions

Galangin is a member of the flavonol class of flavonoids having anti-inflammatory and anti-oxidative potential. Previously we reported the inhibitory effect of galangin on the mast cell-mediated allergic inflammation. For incremental research, we investigated the effects of galangin on atopic dermatitis (AD)-like skin lesions and underlying mechanisms of action. We established an atopic dermatitis model in BALB/c mice by repeated local exposure of house dust mite (Dermatophagoides farinae) extract (DFE) and 2,4-dinitrochlorobenzene (DNCB) to the ears. Repeated alternative treatment of DFE/DNCB caused AD-like skin lesions. Topical application of galangin reduced AD symptoms based on ear thickness and histopathological analysis, in
addition to serum IgE and IgG2a levels. Galangin inhibited mast cell infiltration into the ear and serum histamine level. Galangin suppressed DFE/DNCB-induced expression of interleukin (IL)-4, IL-5, IL-13, IL-31, IL-32, and interferon (IFN)-γ in the ear tissue. To define the underlying mechanisms of action, tumor necrosis factor-α/IFN-γ-activated human keratinocytes (HaCaT) model was used. Galangin significantly inhibited the expression of cytokines and chemokine by the down-regulation of nuclear factor-κB and mitogen-activated protein kinases in HaCaT cells. Taken together, the results demonstrate that galangin inhibited AD-like symptoms, suggesting that galangin might be a candidate for the treatment of AD [Jin Kyeong Choi and Sang-Hyun Kim* (BK21 Plus KNU Biomedical Convergence Program, Department of Pharmacology, School of Medicine, Kyungpook National University, Daegu 700-422, Republic of Korea), Food and Chemical Toxicology, 2014, 68, 135-141].

NPARR, 6(1 & 2), 2015-14 Tamarind seed coat extract restores reactive oxygen species through attenuation of glutathione level and antioxidant enzyme expression in human skin fibroblasts in response to oxidative stress

To investigate the role and mechanism of tamarind seed coat extract (TSCE) on normal human skin fibroblast CCD-1064Sk cells under normal and oxidative stress conditions induced by hydrogen peroxide (H₂O₂). Tamarind seed coats were extracted with boiling water and then partitioned with ethyl acetate before the cell analysis. Effect of TSCE on intracellular reactive oxygen species (ROS), glutathione (GSH) level, antioxidant enzymes such as superoxide dismutase (SOD), glutathione peroxidase (GPx) and catalase activity including antioxidant protein expression was investigated. TSCE significantly attenuated intracellular ROS in the absence and presence of H₂O₂ by increasing GSH level. In the absence of H₂O₂, TSCE significantly enhanced SOD and catalase activity but did not affected on GPx. Meanwhile, TSCE significantly increased the protein expression of SOD and GPx in H₂O₂-treated cells. TSCE exhibited antioxidant activities by scavenging ROS, attenuating GSH level that could protect human skin fibroblast cells from oxidative stress. Results highlight the antioxidant mechanism of tamarind seed coat through an antioxidant enzyme system, the extract potentially benefits for health food and cosmeceutical application of tamarind seed coat [Oranuch Nakchat, Nonthaneth Nalinratana uangdeun Meksuriyen and Sunanta Pongsamart* (Department of Biochemistry and Microbiology, Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok, 10330, Thailand), Asian Pacific Journal of Tropical Biomedicine, 2014, 4(5), 379-385].

NPARR, 6(1 & 2), 2015-15 Anti-inflammatory effects of Bryophyllum pinnatum (Lam.) Oken ethanol extract in acute and chronic cutaneous inflammation

Bryophyllum pinnatum (Lam.) Oken (Crassulaceae), popularly known in Brazil as “folha-da-fortuna”, is a plant species used in folk medicine for the external and internal treatment of inflammation, infection, wound, boil, ulcers and gastritis and several other diseases. The present study aimed to perform the chemical characterization and the evaluation of the topical anti-inflammatory effect of the ethanol extract of Bryophyllum pinnatum leaves (EEBP) in acute and chronic mice ear edema models induced by different irritant agents. The EEBP chemical characterization was performed by HPLC–UV DAD. Ear edema on Swiss mice was induced by the topical application of Croton oil (single and multiple applications), arachidonic acid, phenol, capsaicin and ethyl phenylpropiolate (EPP). The topical anti-inflammatory effect of EEBP was evaluated by measuring the ear weight (acute inflammation models) and thickness (chronic inflammation model). Histopathological analyses of ear tissue samples sensitized with Croton oil (single and multiple applications) were also
performed. The flavonoids rutin, quercetin, luteolin and luteolin7-O-β-d-glucoside were detected in EEBP. Topical application of EEBP significantly \((P<0.001)\) inhibited the ear edema induced by Croton oil single application (inhibition of 57%), arachidonic acid (inhibition of 67%), phenol (inhibition of 80%), capsaicin (inhibition of 72%), EPP (inhibition of 75%) and Croton oil multiple application (55% after 9 days). Histopathological analyses confirmed the topical anti-inflammatory effect of EEBP since it was observed reduction of edema, epidermal hyperplasia, inflammatory cells infiltration and vasodilation. The results suggest that EEBP is effective as a topical anti-inflammatory agent in acute and chronic inflammatory processes possibly due to inhibition of arachidonic acid pathway, which justify the traditional use of \textit{Bryophyllum pinnatum} as a remedy for skin disorders [Lucas A. Chibli, Kamilla C.M. Rodrigues, Carolina M. Gasparetto, Nícolas C.C. Pinto, Rodrigo L. Fabria, Elita Scio, Maria S. Alves, Glauciemar Del-Vecho-Vieira and Orlando V. Sousa* (Department of Pharmaceutical Sciences, Faculty of Pharmacy, Federal University of Juiz de Fora, Rua José Lourenço Kelmer, Campus Universitário, São Pedro, CEP 36036-330, Juiz de Fora, MG, Brazil), \textit{Journal of Ethnopharmacology}, 2014, \textbf{154} (2), 330–338].