tyrosine catalyzed by mushroom tyrosinase with IC₅₀ of 16.8 µM and 21.5 µM, respectively. It compared well with kojic acid, a well-known tyrosinase inhibitor, with an IC₅₀ of 22.4 µM. The inhibitory kinetics, analyzed by a Lineweaver-Burk plot, found rosmarinic acid and its methyl ester to be competitive inhibitors with Kᵢ of 2.35×10⁻⁵ M and 1.52×10⁻⁵ M, respectively. In addition, compounds 1 and 2 showed the scavenging activities on DPPH radical, with IC₅₀ of 4.27 µM and 3.05 µM, respectively. These scavenging effects were more potent than that of L-ascorbic acid (IC₅₀ = 11.75 µM).

Study on antifungal activity of herb oils against *Trichophyton* spp.

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The antifungal activities of the essential oils from *Citrus bergamia, Ciderus atlantica, Cymbopogon citratus*, *Eucalyptus globulus, Juniperus communis, Lavandula angustifolia, Melaleuca alternifolia, Pheragonium graveolens, Pogostemon patchoulis, Rosmarinus officinalis, Syzytium olkensis*, and *Thymus vulgaris*, which are recommended for the treatment of microbial infections in aromatherapy and complementary medicines, were tested against *Trichophyton* spp. The activities were measured by broth dilution method and disk diffusion assay. As the results, most of the test oils inhibited growth of *T. tonsurans, T. mentagrophytes, T. ferrugineum, and T. rubrum*. Especially, the essential oils from *C. atlantica, C. citratus, E. globulus, and P. graveolens* showed the strongest activity among the tested herb oils showing MICs between <0.09 and 0.39 mg/ml.

In vitro Antiinflammatory Activity of the Essential oil Extracted from *Chrysanthemum sibiricum* in Murine Macrophage RAW 264.7 Cells

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This research was undertaken to find the in vitro anti-inflammatory activity of the essential oil (CS-oil) extracted from *Chrysanthemum sibiricum* (Compositae) herbs. We investigated the effects of the CS-oil not only on the formation NO and PGE₂ and TNF-α but also on inducible nitric oxide synthase and cyclooxygenase-2 (COX-2) in lipopolysaccharide (LPS)-induced murine macrophage 264.7. The data obtained were consistent with the modulation of iNOS expression. A similar fashion was also observed when LPS-induced PGE₂ release and COX-2 expression were tested. The significant inhibitory effects were shown in concentration-dependent manners. In addition, CS-oil also mildly but significantly reduced the formation of TNF-α. These actions may contribute to the availability of CS-oil as an anti-inflammatory essential oil. GC-MS data on the oil led to the finding of 2-methoxythioanisol, (+)-camphor, geraniol, citral, thymol, eugenol, β-caryophyllene oxide, β-caryophyllene, β-eudesmol, juniper camphor together with an unknown substance contained more than 3% of the total oil.

Antigastritic and anti-ulcerative constituent from Panax ginseng head and its pharmacological activity

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