**PHYTOCHEMICALS**

*NPAR* 4(3), 2013-0294 **Evaluation of the antinociceptive Activity of Ocimum gratissimum L. (Lamiaceae) essential Oil and its isolated active principles in mice**

*Ocimum gratissimum* is used in popular medicine to treat painful diseases. The antinociceptive properties of *O. gratissimum* essential oil (OgEO) and two of its active principles (eugenol and myrcene) were tested in classic models of pain (hot plate test and formalin test). Adult male C57BL/6J mice acutely received corn oil (control group, p.o.), morphine (positive control group, 5 mg/kg, i.p.), OgEO (10, 20, or 40 mg/kg, p.o.), eugenol or myrcene (both at 1, 5, or 10 mg/kg, p.o.). The highest doses of all tested drugs significantly increased the latency to lick the paw(s) in the hot plate test compared with the control group. OgEO at a dose of 40 mg/kg and eugenol and myrcene at a dose of 10 mg/kg were effective in minimizing animal pain in the first and second phases of the formalin test. The antinociceptive effect shown by all drugs tested in hot plate test was reverted by naloxone administration (1 mg/kg), indicating opioid system participation. These results demonstrate the beneficial effects of OgEO and its active principles against neurogenic and inflammatory pain. Our findings demonstrate that OgEO and its isolated active principles exhibited antinociceptive activity in murine pain models [L. I. G. Paula-Freire, M. L. Andersen, G. R. Molska, D. O. Köhn, E. L. A. Carlini, (Lyvia Izaura Gomes de Paula Freire, Departamento de Psicobiologia, Universidade Federal de São Paulo, Brazil, Rua Napoleão de Barros, 925, Vila Clementino, São Paulo 04024-002, SP, Brazil) *Phytotherapy Research*, 2013, 27(8), 1220-1224].

The objective of this study was to evaluate anti-inflammatory and antimicrobial activities of neovestitol and vestitol isolated from Brazilian red propolis (BRP). BRP ethanolic extract (EEP), neovestitol, and vestitol were evaluated by anti-inflammatory properties using a neutrophil migration assay. The antimicrobial activity was evaluated by minimal inhibitory and bactericidal concentrations (MIC and MBC) against *Streptococcus mutans, Streptococcus sobrinus, Staphylococcus aureus*, and *Actinomycyes naeslundii*. Neovestitol, vestitol, and EEP inhibited neutrophil migration at a dose of 10 mg/kg. Regarding antimicrobial activity, neovestitol showed MICs ranging from <6.25 to 25–50 µg/mL and MBCs ranging from 25–50 to 50–100 µg/mL, while vestitol showed MICs ranging from 25–50 to 50–100 µg/mL and MBCs ranging from 25–50 to 50–100 µg/mL. Both isoflavonoids neovestitol and vestitol are consistent bioactive compounds displaying anti-inflammatory and antimicrobial activities that can strongly act in a low dose and concentration and have a promising potential to be applied in the pharmaceutical and food industries [Bruno Bueno-Silva, Severino M. Alencar *, Hyun Koo, Masaharu Ikegaki, Gil V. J. Silva, Marcelo H. Napimoga and Pedro L. Rosalen (College of Agriculture “Luiz de Queiroz” (ESALQ), University of São Paulo (USP), C.P. 9, 13418-900 Piracicaba, São Paulo, Brazil), *J Agric Food Chem*, 2013, 61(19), 4546-4550].

*NPAR* 4(3), 2013-0297 **Identification of acteoside as the active antioxidant principle of Premna serratifolia root wood tissues**

*Premna serratifolia* Linn. (syn. *Premna integrifolia*) is one of the most widely used plant in the Ayurvedic system of medicine. Several pharmacological activities including antioxidant effects and phytochemical investigations have been previously reported for the various parts of plant, except the root woody tissues. In the present study, the antioxidant activity and active
principle of the root woody tissues were investigated Antioxidant effect was routinely monitored using the DPPH radical scavenging assay while phytochemical investigation was based on analysis using HPLC and Teledyne Isco flash chromatography system. Through the use of comprehensive spectroscopy studies, the isolated active antioxidant principle was identified as acteoside (verbacoside). Aceoside, which was about four times more active (18.3 ± 3.7 µg/ml; 11.4 ± 2.3 µM) than the crude root wood extract (73.8 ± 2.4 µg/ml), could account for most of the reported pharmacological activity on P. serratifolia [Lekshmi V. Bose, George K. Varghese and Solomon Habtemariam* (Pharmacognosy Research Laboratories, Medway School of Science, University of Greenwich, Chatham, Maritime, Kent ME4 4TB, UK), Phytopharmacology, 2013, 4(2), 228-236].

NPARR 4(3), 2013-0298 Identification of 1, 8-Cineole, Borneol, Camphor, and Thujone as anti-inflammatory compounds in a Salvia officinalis L. infusion using Human Gingival Fibroblasts

Drinking or gargling Salvia officinalis L. infusion (sage infusion) is thought to soothe a sore throat, tonsillitis, and inflamed, red gums, although structure-based scientific evidence for the key anti-inflammatory compounds in sage infusion is scarce. Human gingival fibroblasts (HGF-1) were treated with sage infusion (SI) or SI fractions containing either its volatile components and water (aqueous distillate, AD) or its dry matter (DM) for six hours. SI, AD, and DM reduced a mean phorbol-12-myristate-13-acetate/ionomycin (PMA/I)-stimulated release of the pro-inflammatory interleukins IL-6 and IL-8 by more than 50% (p < 0.05). Cellular uptake experiments and subsequent GC-MS analysis using stable-isotope-labeled internal standards revealed the presence of 1,8-cineole, borneol, camphor, and α-/β-thujone in SI-treated cells; LC-MS analysis demonstrated the presence of rosmarinic acid. A significant, more than 50% mean inhibition of PMA/I-induced IL-6 and IL-8 release was demonstrated for the volatile compounds 1,8-cineole, borneol, camphor, and thujone, but not for the nonvolatile rosmarinic acid when applied in concentrations representative of sage infusion. Therefore, the volatile compounds were found to be more effective than rosmarinic acid. 1,8-Cineole, borneol, camphor, and α-/β-thujone chiefly contribute to the anti-inflammatory activity of sage infusion in human gingival fibroblasts [Miriam M. Ehrnhöfer-Ressler, Kristina Fricke, Marc Pignitter, Joel M. Walker, Jessica Walker, Michael Rychlik and Veronika Somoza *(Department of Nutritional and Physiological Chemistry, University of Vienna, Althanstrasse 14, 1090 Vienna, Austria), J Agric Food Chem, 2013, 61 (14), 3451-3459].

NPARR 4(3), 2013-0299 Antibacterial and anti-inflammatory effects of Syzygium jambos L. (Alston) and isolated compounds on acne vulgaris

Bioassay guided isolation of ethanol extract of the leaves of S. jambos led to the isolation of three known compounds namely; squalene, an anacardic acid analogue and ursolic acid which are reported for the first time from this plant. The ethanol extract of S. jambos and one of the isolated compound namely, anacardic acid analogue were able to inhibit the growth of P. acnes with a noteworthy minimum inhibitory concentration (MIC) value of 31.3 and 7.9 µg/ml, respectively. The ethanol extract and three commercially acquired compounds namely; myricetin, myricitrin, gallic acid exhibited significant antioxidant activity with fifty percent inhibitory concentration (IC₅₀) ranging between 0.8-1.9 µg/ml which was comparable to that of vitamin C, the reference antioxidant agent. The plant extract, compounds ursolic acid and myricitrin (commercially acquired) significantly inhibited the release of inflammatory cytokines IL 8 and TNF α by suppressing them by 74 -
99%. TEM micrographs showed the lethal effects of selected samples against *P. acnes*. The interesting antibacterial, antioxidant and anti-inflammatory effects of *S. jambos* shown in the present study warrant its further investigation in clinical studies for a possible alternative anti-acne agent [Richa Sharma, Navneet Kishore, Ahmed Hussein and Namrita Lal* (Department of Plant Science, Faculty of Agricultural and Biological Science, University of Pretoria, Pretoria 0002 South Africa), *BMC Complementary and Alternative Medicine* 2013, 13, 292].