International Journal of Cosmetic Science

International Journal of Cosmetic Science, 2010, **32**, 395–396

Abstracts of papers published in the Journal of Cosmetic Science, Volume 61, No. 2, 2010

pp. 73–83

***In vitro*/*in vivo* and analytical evaluation of sunless tanning formulations containing different rheology modifiers** *by O. V. Dueva-Koganov, Y. Mandalia, J. Brito, C. Rocafort, S. Orofino and G. Vazquez: Ciba Corporation (Ciba is part of BASF Group), Tarrytown, NY, USA*

In vitro data suggest that different *in vivo* performances are expected for two dihydroxyacetone (DHA)-containing formulations with similar concentrations of DHA and excipients but different commercially available rheology modifiers: one with a cationic polymer-based rheology modifier (blend) [dimethylacrylamide/ethyltrimonium chloride methacrylate copolymer (and) propylene glycol dicaprylate/dicaprate (and) PPG-1 trideceth-6 (and) C10-11 isoparaffin]; and the other with a polyacrylamide-based rheology modifier (blend) [polyacrylamide (and) C13-14 isoparaffin (and) laureth-7]. Both rheology modifiers (blends) contained comparable levels of polymers and were used at 3% w/w (as supplied). Differences in color development were illustrated *in vitro* with respect to the yellow/red and lightness/chroma parameters, which were confirmed in the followup *in vivo* studies. The test article with the cationic polymer-based rheology modifier produced a more natural sunless tan, comparable to a desirable sun-induced tan, for all panelists, one that was more uniform and lasted longer compared with the sunless tan generated by the test article with the polyacrylamide-based rheology modifier. A method for HPLC analysis of DHA in sunless tanning formulations was established and utilized to confirm concentrations of DHA in test articles.

pp. 85–105

Basic optics of effect materials *by S. A. Jones: BASF Corporation, 540 White Plains Road, Tarrytown, NY 10591, USA*

Effect materials derive their color and effect primarily from thin-film interference. Effect materials have evolved over the decades from simple guanine crystals to the complex multilayer optical structures of today. The development of new complex effect materials requires an understanding of the optics of effect materials. Such an understanding would also benefit the cosmetic formulator as these new effect materials are introduced. The root of this understanding begins with basic optics. This paper covers the nature of light, interference of waves, thin-film interference, color from interference, and color travel.

pp. 107–123

New alternatives to cosmetics preservation *by S. Papageorgiou**†, A. Varvaresou**, E. Tsirivas** and C. Demetzos‡: **Laboratory of Cosmetology, Department of Aesthetics and Cosmetology, School of Health & Caring Professions, Technological Educational Institution, Ag. Spyridonos Str., 12210 Egaleo; †Frezyderm S.A., Medicine-Cosmetics, 4 Tatoiou Avenue, 14451 Metamorphosi and ‡Department of Pharmaceutical Technology, School of Pharmacy, University of Athens, Panepistimiopolis, 15771 Zografou, Athens, Greece*

This work was partially presented at the 7th Joint Meeting of AFRP, ASP, GA, PSE and SIF, Athens, Greece, and at the XIIIth COSMODERM Joint Meeting of ESCAD and the Hellenic Society of Dermatology and Venerology, Athens, Greece.

In recent years, there is a considerable interest in the development of preservative-free or self-preserving cosmetics. The aim of our work was to develop new cosmetic formulations by replacing chemical preservatives with ingredients with antimicrobial properties that are not legislated as preservatives according to Annex VI of Commission Directive 76/768/EEC. This paper describes the preservative efficacy of the well-known antimicrobial extracts of Lonicera caprifoleum and Lonicera japonica in combination with glyceryl caprylate and/or levulinic acid, p-anisic acid, and ethanol. We prepared a series of acidic (pH = 5.5) aqueous and O/W formulations, i.e., tonic lotion, shampoo, shower gel, conditioning cream, anticellulite cream, cleansing milk and peeling cream, containing (0.2% w/w) Lonicera extracts, alone in the case of tonic lotion and in combination with (1% w/w) glyceryl caprylate in the other products, and we performed challenge tests according to the European Pharmacopoeia procedures and criteria. Formulations such as shampoo, shower gel, and conditioning cream fulfilled criterion A, while tonic lotion, anticellulite cream, cleansing milk, and peeling cream fulfilled criterion B, in regard to contamination from *A. niger*. Furthermore, we evaluated the efficacy of the antimicrobial systems in two states of use: the intact product and after 3 weeks of consumer use. The results showed that *A. niger* was also detected during use by consumers in the products that satisfied only criterion B in challenge tests. The addition of antimicrobial fragrance ingredients such (≤0.3% w/w) levulinic acid or (0.1% w/w) p-anisic acid and/or (5% w/w) ethanol afforded products that met criterion A in challenge tests and were also microbiologically safe during use. The small quantity (5% w/w) of ethanol gave an important assistance in order to boost the self-preserving system and to produce stable and safe products.

pp. 125–132

Direct inhibition of elastase and matrixmetalloproteinases and stimulation of biosynthesis of fibrillar collagens, elastin, and fibrillins by xanthohumol *by N. Philips**, *M. Samuel**, *R. Arena**, *Y.-J. Chen**, *J. Conte**, *P. Natrajan**, *G. Haas** *and S. Gonzalez*†‡: **School of Natural Sciences, Fairleigh Dickinson University, Teaneck, NJ; †Industrial Cantabria Farmaceutica, S.A, Madrid, Spain and ‡Dermatology Service, Memorial Sloan- Kettering Cancer Center, New York, USA*

In skin aging there is deterioration of the extracellular matrix's collagen and elastin fibers, from its reduced biosynthesis and increased degradation by elastase and matrixmetalloproteinases (MMPs). Xanthohumol is a flavonoid isolated from the hop plant Humulus lupulus L., with anti-microbial, antioxidant, anti-inflammatory, and anti-carcinogenic properties. The goal of this research was to investigate xanthohumol as an anti-skinaging agent via its beneficial regulation of the extracellular matrix. To this purpose, we examined the direct effect of xanthohumol on the activities of elastase and MMPs (MMPs 1, 2, and 9) and its effect on the expression (protein and/or transcription levels) of collagens (types I, III, and V), elastin, and fibrillins (1 and 2) in dermal fibroblasts. Xanthohumol significantly inhibited elastase