



## Abstracts

Abstracts of papers published in the Journal of Cosmetic Science, Volume 60, September–October 2009

*J. Cosmet. Sci.*, **60**, 475–484 (September/October 2009)

### **Influence of an extract from kudzu symbiosomes containing leghemoglobin on *in vitro* cutaneous procollagen production**

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#### **Synopsis**

Cytoglobin is a hexacoordinate globin protein that was recently discovered in mammals. Interestingly, of the four human globin proteins that are now known, hemoglobin, myoglobin, neuroglobin and cytoglobin, the latter appears to have the closest resemblance to strikingly similar proteins expressed in plants. In legumes, these proteins accumulate in symbiosomes (root nodules) of various legumes and are called leghemoglobin. The paper will discuss the ability of an aqueous extract from *Pueraria lobata* (kudzu) symbiosomes that contains leghemoglobin to stimulate procollagen production in human dermal fibroblasts. This effect may be partly due to the possibility that leghemoglobin may mimic the function of cytoglobin by shuttling oxygen to prolyl-4-hydroxylase, the enzyme responsible for oxidizing proline residues in procollagen bundles. This hypothesis is supported by DNA microarray sequencing data that demonstrate that treatment of normal human dermal fibroblasts (NHDF) with highly purified cytoglobin or leghemoglobin upregulates a number of key collagen-related genes including COL1A1 and COL1A2.

*J. Cosmet. Sci.*, **60**, 485–500 (September/October 2009)

### **Determination of retinol, retinyl palmitate, and retinoic acid in consumer cosmetic products**

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#### **Synopsis**

Retinol and retinyl palmitate are frequently used in cosmetic products. A simple, rapid, and sensitive reversed-phase high-performance liquid chromatography (HPLC) method with ultraviolet (UV) detection was developed for the quantitation of retinol, retinyl palmitate, and retinoic acid in cosmetic preparations. The analytes were extracted from a cosmetic/Celite mixture using a solvent system composed of equal amounts of hexane, isopropanol, and ethyl acetate, and the extract was injected directly into an HPLC chromatograph with a C18 column and UV detector set at 330 nm. Chromatographic separation was achieved by gradient elution with a mobile phase, starting with aqueous ammonium acetate buffer/methanol that was gradually changed to methanol/dichloromethane. The average recoveries of retinol, retinyl palmitate, and retinoic acid from spiked cosmetic products were 95% or higher. In a survey of 29 consumer cosmetic skin care products labeled to contain retinoids, most products were found to contain either retinol or retinyl palmitate at concentrations up to 2.2% (w/w), while a few products contained both ingredients. A number of products also contained *cis* isomers of retinol that could be quantitatively distinguished from the all-*trans* compound. The method can be used to quantitate several retinoids and their isomers in cosmetic products. The method will be useful for obtaining information needed to estimate levels of exposure to retinoids from cosmetic products.

*J. Cosmet. Sci.*, **60**, 501–508 (September/October 2009)

### **A novel method to study the skin-lightening effect of topical materials**

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#### **Synopsis**

Skin without significant dyschromia is an aesthetic requirement for people worldwide.