Cosmetrics: *In-vivo* Measurements of Haemoglobin, Melanin and Collagen

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Abstract

Cosmetrics is the latest development in skin-imaging using our company's patented technology SIAscopy (Spectrophotometric Intracutaneous Analysis). SIAscopy, which was originally developed as a tool to aid the diagnosis of malignant melanoma, allows the visualisation and accurate measurement of haemoglobin, melanin and collagen concentrations in living skin.

Many cosmetic and skincare products are formulated to affect changes in these three primary constituents of the skin, but analysis of cosmetic product effectiveness has historically been hampered by a lack of sensitive and objective measurement tools. SIAscopy is based on an extremely thorough understanding of how light interacts with the skin and uses specific wavelengths of light to probe the skin, producing maps of haemoglobin, melanin and collagen.

Cosmetrics, our latest software product, has been designed for cosmetic formulators to combine SIAscopy with various tools that facilitate the collection, management and analysis of data during a clinical trial.

This article describes the underlying technology and highlights the benefits of using a tool based on rigorous scientific methodology to validate product claims, stand up to regulatory scrutiny and increasing customer demands.

Introduction

Cosmetics have been used for the purpose of beautifying and cleansing since the beginning of civilisation but only recently has there been a crossover between cosmetics and pharmaceuticals. Cosmetics are now not just expected to improve appearance but are aimed at actively targeting the physiological processes in the skin to achieve a multitude of visible changes, especially those responsible for slowing or reversing the signs of ageing.

In parallel with the development of innovative and highly efficacious formulations, novel techniques to analyse the effects of the new generation of products also had to be developed. Instruments are now available to objectively measure the skin surface (topography), elasticity, hydration and rate of cell turnover. In addition to that, a new product has recently become available to quantitatively assess the skin constituents responsible for a youthful appearance.

This article introduces Cosmetrics, a new product which uses the proprietary technology SIAscopy, the latest skin imaging technology to allow formulators of modern cosmetics accurate quantification of anti-ageing effects in-vivo.

Skin imaging

In a wider sense skin imaging is part of medical imaging, which is a technique used to create images of the human body, such as ultrasonography employed to visualise the foetus in a pregnant woman, or MRI scanning which has gained great popularity in recent years for the diagnosis of brain tumours. The defining point in medical imaging is that the acquired measurements are not simply shown as a graph, such as in an ECG but instead are presented containing spatial information. The resulting images are also referred to as maps, which resemble black and white photographs of the scanned organ. The major advantage of medical imaging is that it is non-invasive, allowing diagnosis without the need for incisions. It is important to point out that skin biopsies are relatively easy procedures to perform, however, the associated scarring, especially that caused by facial biopsies, is unacceptable to a patient unless there is a medical justification such as the removal of a melanoma. In cosmetic research no such health benefits exist and facial biopsies are therefore considered unethical and rarely carried out. Instead there is a high demand for alternatives which are precise and