

# Trace & Quantify Keep TraQ of your active



## I. Introduction

Raman spectroscopy provides in vivo information on the presence and the concentration of the chemical components of the skin.

All active ingredients that can be measured with Raman spectroscopy in the skin, can be quantified. The quantification of molecules with the SCA Model 3510 is based on the linear relationship between the Raman signal intensity and the concentration of the analyte. Quantification makes comparison with other results such as tape stripping and in vitro experiments possible. More information on the method of quantification can be found in Application Note 10.

## II. Possible Quantitative Results

- Penetration depth profile in mmol analyte/gram keratin
- Flux in  $\mu\text{g}/\text{cm}^2/\text{h}$
- Diffusion constant in  $\text{cm}^2/\text{s}$
- Partition coefficient
- Percentage of applied dose

## III. Quantified Compounds Up to Date

- Caffeine
- Menthol
- Octocrylene
- Pyrene
- Toluene
- Octyl Methoxyethyl Cinnamate (OMC)
- Methylene Bis-Benztriazolyl Tetramethylbutylphenol
- Trisbiphenyltriazene
- Ascorbic Acid
- Ibuprofen
- Ethanol

## IV. Benefits

- Direct comparison to alternative methods
- One-button calculations
- Validation of the SCA Model 3510

## V. Experimental Example

The absorbed amount of OMC into the first layers of the stratum corneum can be calculated straight forwardly from the depth concentration profiles.

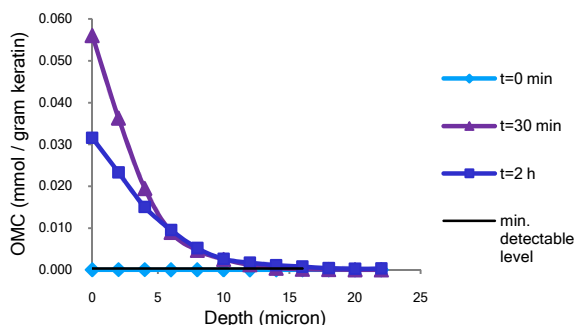


Figure 1. Penetration depth profile of OMC Penetration profile after different application times, 30 minutes and 2 hours.

Figure 2 represents the same data as in figure 1, but recalculated to absorbed amounts per  $\text{cm}^2$  into the first 12 micron of the stratum corneum. The absorbed amount of OMC after 2 hours is less than after 30 minutes, because of the depletion of OMC at the surface and lateral diffusion.

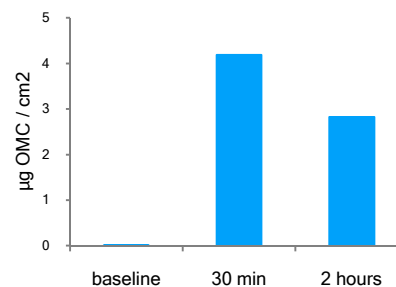


Figure 2. The total penetrated amount of OMC into the first 12 micron of the stratum corneum. Two application times, 30 minutes and 2 hours.

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