

Ceramide analysis

2D & 3D models to evaluate the effect of your products on ceramide synthesis & elongation

CONTEXT & BACKGROUND

Ceramides are part of the intercorneocyte lipids (such as cholesterol and fatty acids) and play a fundamental role in skin barrier function.

They are the main lipids found in the stratum corneum.

There are several types of ceramides classified according to their chemical structure.

Long-chain ceramides of the NS type (sphingosine base coupled to a non-hydroxylated fatty acid) represent the largest family (20%) of total ceramides contained in the stratum corneum.

Ceramides guarantee the integrity of the intercorneocyte cement, which is involved in the skin's barrier functions.

in vitro SOLUTIONS

QIMA Life Sciences provides you with assays to evaluate the ability of your compound to modulate **ceramide synthesis and elongation**.

These assays can be performed for ceramides of different families. In the example below, we show our results obtained for N32S18 ceramide.

ASSAYS

Semi-quantitative analysis of ceramides on NHEK:

- Normal Human Epidermal Keratinocytes (NHEK)
- LC/MS
- Positive reference: ascorbic acid / Inhibitory reference: rosiglitazone
- Total ceramides, short-chain ceramides, long-chain ceramides

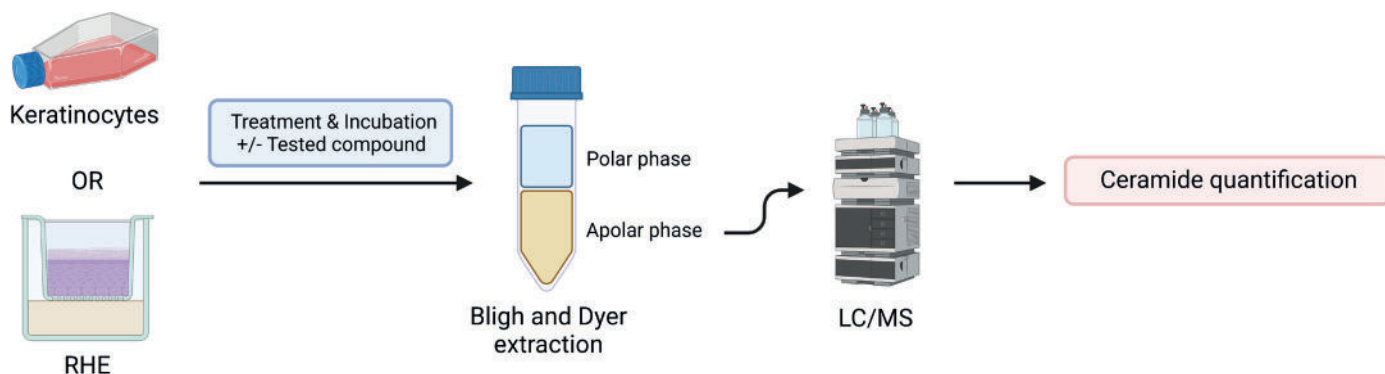
Semi-quantitative analysis of ceramides on RHE:

- Reconstructed Human Epidermis (RHE)
- LC/MS
- Positive reference: ascorbic acid / Inhibitory reference: retinoic acid
- Total ceramides, short-chain ceramides, long-chain ceramides

Complementary assays:

- **NMFs (Filaggrin catabolites) analysis** - RHE - LC/MS
- **Differentiation state analysis** - Immunostaining (multiple markers)
- **Gene expression** - RT-qPCR

PROTOCOL

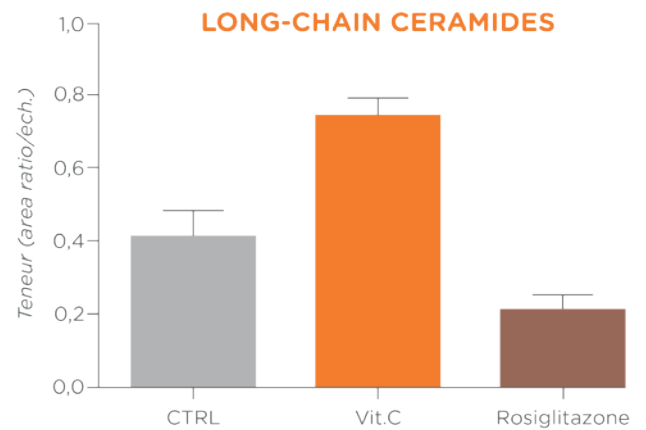


Ceramide synthesis & elongation analysis

Ceramide synthesis by NHEK → Positive impact of Vitamin C

Ceramide synthesis by **NHEK** (after 72 hours)

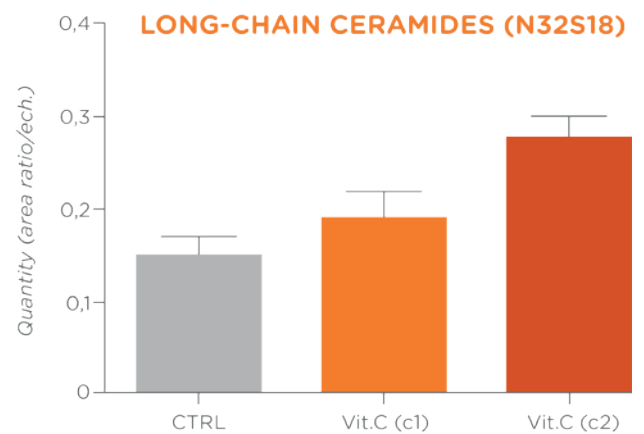
→ Vitamin C **increases the amount of long-chain ceramides** while rosiglitazone **inhibits their synthesis**.



Ceramide synthesis by RHE → Positive impact of Vitamin C

Ceramide synthesis by **RHE** (after 7 days)

→ Vitamin C **increases the amount of long-chain ceramides in a dose-dependent manner**.



Ceramide synthesis by RHE → Inhibitory impact of Retinoic acid

Ceramide synthesis by **RHE** (after 7 days)

→ Retinoic acid **decreases the amount of long-chain ceramides N32S18**.

