REGULATING THE EXPRESSION OF GENES ASSOCIATED WITH THE SYNTHESIS AND MAINTENANCE OF DERMAL HYALURONAN AND BARRIER LIPIDS VIA TOPICAL TREATMENT OF SALICIN- AN IN VITRO ANALYSIS

Remona Gopaul and Helen Knaggs
Nu Skin Global Research and Development, Nu Skin Enterprises, Provo, Utah, USA

INTRODUCTION
Willow bark extracts have been used for hundreds of years as anti-inflammatory agents in treating rheumatic disorders. More recent work, specifically of an extract of white willow bark known as salicin ([2-(Hydroxymethyl)phenyl]-β-D-glucopyranoside), has focused on its capability as an anti-inflammatory agent. While salicin’s anti-inflammatory mechanisms have been explored, little has been done to investigate other benefits and capabilities of this extract. In-house, unpublished topical human clinical testing, salicin containing formulations have been observed to increase the hydration of skin. Hydration is regulated by many different components involved in various biological processes in the skin. These include the synthesis and maintenance of components such as barrier lipids and dermal hyaluronan (HA). This research sought to explore the in vitro effect of salicin in influencing the expression of the genes involved in skin hydration.

METHODOLOGY
Salicin at 0.5% (dissolved in water) was applied topically to the stratum corneum of the skin cultures for 24 or 48 hours. RNA was isolated and processed for Affymetrix analysis using HG-U133 2.0 microarrays and/or Taqman qPCR. Untreated cultures were used as the control. Data analysis was carried out using GeneSpring Software (version 3.1) and StatMiner (version 3.1) for the microarray and qPCR methods respectively.

RESULTS
Figure I. Upregulation of HA synthesis (2) after 24 hours of stimulation and upregulation of HAS2 (Hyaluronan Synthase 2) after 24 and 48 hours of stimulation. Figure II illustrates downregulation of HPSE (Hyaluronidase 2) after 24 hours of stimulation and downregulation of HPSE after 24 and 48 hours of stimulation.

Figure II. Summary of the action of salicin on HA synthesis and maintenance and lipid accumulation and synthesis.

CONCLUSION
Based on these findings, it can be concluded that salicin regulates the expression of key genes associated with the synthesis and maintenance of dermal HA and barrier lipids.

REFERENCES
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FOR FURTHER INFORMATION
For Further Information, contact: Remona Gopaul, Nu Skin Global Research and Development. 75 West Center Street, Provo, UT 84601, Website: www.nuskin.com