

## Chemical Sciences and Advanced Chromatography 2019: A hydrophilic interaction liquid chromatography method for the quantitation of acetyl hexapeptide-8 in cosmeceuticals - Athanasia Varvaresou - University of West Attica - Greece National and Kapodistrian University of Athens

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The incorporation of bioactive ingredients in the preparation of cosmetics (referred to as cosmeceuticals) is gaining popularity, over the past fifty years, to deliver a biologic activity in support of cosmetic claims to provide beneficial topical actions. Cosmeceuticals were made possible by the increased understanding of skin physiology. Peptide cosmeceuticals is a new and popular option to treat aging skin as secondary benefit of research on wound healing as far back as the 1930s, when yeast extracts have been used in medications for their enhancement of wound healing. However, the use of engineered proteins possessing biological activity is novel. There is a real need to set up analytical methods in order to quantitate the active compounds in cosmeceuticals. The aim of this work was on the use of hydrophilic interaction liquid chromatography method for the quantitation of acetyl hexapeptide-8 in cosmetic products. Acetyl hexapeptide-8 mimics the N-terminal end of the SNAP-25 protein. It competes with the natural protein for a position in the SNARE complex, which is essential for muscle contraction. The anti-wrinkle effects of acetyl hexapeptide-8 are similar to those of botulinum neurotoxin. Hydrophilic interaction liquid chromatography (HILIC) combines the characteristics of three major methods in HPLC: reversed phase (RPC), normal phase (NPC) and ion chromatography (IC). The functional group of the Xbridge®-HILIC BEH analytical column used in this work consists of BEH particles containing a sufficient number of accessible silanols on the surface. Chromatographic separation was achieved on a BEH XBridge®-HILIC analytical column with a mobile phase that was composed of a 30% 20 mM ammonium formate water solution in acetonitrile and pumped at a flow rate of 0.25 mL/min-1. UV detection of acetyl hexapeptide-8 was achieved at 225 nm. Sample preparation was based on dilution of the cosmetic cream into the mobile phase prior to their injection into the HILIC-UV system. The proposed HILIC method has been evaluated over the linearity, precision, accuracy and specificity and proved to be convenient and effective for the determination of acetyl hexapeptide-8 in cosmetic creams.

### Recent Publications:

1. Mahairas G, Panderi I, Geballa-Koukoula A, Rozou S, Antonopoulos N, Charitos C and Vonaparti A (2018) Development and validation of a hydrophilic interaction liquid chromatography method for the quantitation of impurities in fixed-dose combination tablets containing rosuvastatin and metformin. *Talanta* 183:(131-141).
2. Giannakou M, Varvaresou A, Kyriazopoulos E, Papageorgiou S, Kavallou E and Panderi E (2018) Quantification of oligopeptide-20 and oligopeptide-24 in cosmetic creams using hydrophilic interaction liquid chromatography/electrospray ionization mass spectrometry. *Journal of Separation Science* 1(3):159-167.
3. Raikou V, Varvaresou A, Panderi I and Papageorgiou E (2017) The efficacy study of the combination of tripeptide-10-citrulline and acetyl hexapeptide-3. A prospective, randomized controlled study. *Journal of Cosmetic Dermatology* 16(2):271-278.
4. Varvaresou A and Papageorgiou S (2016) Efficacy tests of alternative preservatives in combination with phenoxyethanol for development of safe cosmetic products for children. *Review of Clinical Pharmacology and Pharmacokinetics, International Edition* 30(3):79-83.
5. Kalogria E, Varvaresou A, Papageorgiou S, Protopapa E, Tsaknis I, Matikas A and Panderi I (2014) Pre-column derivatization HPLC procedure for the quantitation of aluminium chlorohydrate in antiperspirant creams using quercetin as chromogenic reagent. *Chromatographia* 77(19-20):1275-1281.
6. Papagianni P, Varvaresou A, Papageorgiou S and Panderi I (2011) Development and validation of an ion-pair RP-HPLC method for the determination of oligopeptide-20 in cosmeceuticals. *Journal of Pharmaceutical and Biomedical Analysis* 56(3):645-649.