

# Chromatography

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## Performance evaluation of different columns in hydrophilic interaction liquid chromatography for the determination of N-nitrosodiethanolamine in shampoo

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**N**-nitrosodiethanolamine (NDELA) as a non-volatile and carcinogen nitrosamine has been detected in a wide variety of cleaning products, cosmetic raw materials and products. Several methods have been developed to detect and determine NDELA. In this study, a novel hydrophilic interaction liquid chromatography (HILIC) method has been introduced for determination of NDELA as a polar compound in shampoos. For this purpose, different columns were utilized and their global resolutions and asymmetry factors were acquired in order to evaluate chromatographic performance of each column. Separation was achieved on CN, Si, NH<sub>2</sub>, and Zwitterionic (ZIC) columns. The flow rate and injection volume were 0.8 mL min<sup>-1</sup> and 20 µL, respectively, with UV detection at 234 nm wavelength. In order to optimize mobile phase (MP) composition, content of acetate buffer varied from 0 to 10%. The obtained results were shown retention of NDELA was increased with decrease of water content of the MP, but at least 2% of water is needed for a sufficient hydration of the stationary phase particles. Also pH and the concentration of the buffer were changed in the range of 3.7 to 7.7 and 5 to 100 mM, respectively. Based on our results, the best separation conditions were chosen: acetonitrile/40 mM ammonium acetate, pH 4.7 (98:2, v/v) as the MP and column temperature of 35°C. With respect to the global resolution and asymmetry factor, ZIC column showed the best performance followed by an NH<sub>2</sub> column. The proposed method can be satisfactorily applied to the inspection of shampoos.

### Biography

G Abedi is a PhD candidate in Analytical Chemistry at Alzahra University, Tehran, Iran. She has published 3 papers in ISI journals. Her current research interests are Chromatographic Methods, Mass Spectrometry, Cosmetics and Detergent Industry, Pharmaceutical Industry.

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