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## Chromatographic determination of imidazolidinyl urea and diazolidinyl urea in presence of formaldehyde; a toxic degradation product and in mixtures with other preservatives in cosmetic formulations

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Two sensitive and selective chromatographic methods were developed for determination of imidazolidinyl urea [Iu] and diazolidinyl urea [Du] as formaldehyde-releasing preservatives with satisfactory precision. The first method is concerned with the application of TLC-densitometric technique as a stability indicating method for determination of the studied preservatives in the presence of their toxic degradation product; formaldehyde without any interference. The best resolution was achieved on silica gel plates F254 and using dichloromethane: water: methanol: acetonitrile (3:1:3:4, by volumes) as a developing mobile phase containing 1 gm % Ninhydrin as a coloring agent. Densitometric measurements were done in a fluorescence mode at 366 nm using mercury lamp. Linearity ranges were found to be 5-17.5 µg spot<sup>-1</sup> and 2.50-17.5 µg spot<sup>-1</sup> for Iu and Du, respectively. The second method based on high performance liquid chromatography was developed for simultaneous determination of Iu or Du with other preservatives like sodium benzoate, phenoxyethanol, methyl paraben, ethyl paraben and propyl paraben. Complete base line separation was attained utilizing an Inertsil C8 column (300x4.6 mm, 5 µm) and a mobile phase consisting of methanol: 0.025 M phosphate buffer, pH 6.0 with gradient elution mode and UV detection at 214 nm. Linearity ranges for Iu and Du were found to be 50-500 µgml<sup>-1</sup>. The effect of pH and temperature were studied by the suggested methods to investigate the solution stability of the preservatives under study. The proposed methods were validated according to ICH guidelines and statistical analysis of the results revealed high accuracy and good precision.

### Biography

Amal Mahmoud Abou Al Alamein has completed his PhD from Cairo University and Post-doctoral studies from Cairo University, Faculty of Pharmacy. She has academic experiences in teaching Analytical Chemistry courses for undergraduates and post-graduates. Her research interest is based on method development and validation of different analytical techniques as: Chromatography; UV-Spectrophotometry; Chemometrics and Potentiometric methods with ion selective electrodes (ISEs) and screen printed electrodes (SPEs) incorporated with carbon nanotubes as potentiometric sensors. She has published more than 13 papers in reputed journals and has been serving as a reviewer in international scientific journals.

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