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Green chromatographic analysis: Application on pharmaceutical ternary mixture

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Safety and ecological friendliness are now of paramount importance, because of the increased awareness of the negative impact of hazardous chemicals on human and environment. Several trials have been applied to increase the greenness of chromatographic methods, and introduce the solvent replacement strategy, the most important one, as most of the used solvents are classified as Volatile Organic Compounds (VOCs) which can easily diffuse and have both acute and chronic toxic effects. Huge amount of these hazardous organic solvents are used in chromatographic methods; either as solvents, reagents or/and mobile phases. In this work, Green Analytical Chemistry (GAC) principles were implemented in the chromatographic determination of pharmaceutical ternary mixture in their bulk powder and in their dosage forms. The main challenge was to design methods that neither use nor produce harmful chemicals and produce minimum waste for the routine analysis of the studied drugs without harming the environment alongside without affecting the analytical method parameters and performance. The methods were validated with respect to linearity, precision, accuracy, system suitability, and robustness. The developed methods were compared to the reported conventional chromatographic methods with regard to validation parameters and greenness profiles. The suggested methods were found to be greener and more time and solvent-saving than the reported ones. Hence, they can be used for routine analysis of the studied mixtures in a safer way.

Biography

Heba Moustafa Mohamed has completed her MSc and PhD degrees in Pharmaceutical Analysis from Faculty of Pharmacy, Cairo University, Egypt. She has extensive experience in different analytical techniques and she focuses on implementing green analytical chemistry principles in pharmaceuticals analysis. She has published more than 15 papers in highly reputed international journals and has been serving as reviewer for many highly esteemed journals.

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