




# Ultrasonic-assisted cloud point microextraction and spectrophotometric determination of Ponceau 4R in various beverage samples using Non-ionic surfactant PONPE 7.5

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## ABSTRACT

In the current study, a simple, cheap, and fast analytical procedure, termed ultrasonic-assisted cloud point microextraction (UA-CPME), combined with UV-VIS spectrophotometry, was developed for the pre-concentration and identification of Ponceau 4R in some beverage samples. Ponceau 4R was extracted from aqueous solution using polyethylene glycol mono-*p*-nonylphenyl ether (PONPE 7.5) as extraction solvent in the presence of Cu(II) at pH 6.0. Variables influencing the UA-CPME extraction efficiency such as pH, metal type and amount, temperature, ultrasonic effect, solvent type, non-ionic surfactant type and concentration were optimised in detail. Under optimum conditions, the analytical properties of the developed method were as follows: linear working range, 20–750  $\mu\text{g L}^{-1}$ ; limit of detection, 6.5  $\mu\text{g L}^{-1}$ ; and the pre-concentration factor, 200. The relative standard deviation (RSD%) obtained for 50  $\mu\text{g L}^{-1}$  ( $n = 5$ ) of Ponceau 4R was 2.9%. The accuracy and precision of the method were evaluated by intra-day and inter-day studies. Finally, the developed method has been successfully applied to the separation and identification of Ponceau 4R in the selected samples and the recoveries ranged from 94.3 to 104.2%

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## KEYWORDS

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