

A-3

ELECTROCHEMICAL STUDIES ON FOOD PIGMENTS IN VIEW OF THEIR DETECTION IN SOFT DRINKS

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Food pigments are generally recognized as harmful for human health, having particularly deficit problems for children. Their effects are still insufficiently known, especially regarding the cumulative effect over time¹. Ponceau 4R (P 4R), known as E124 is an example of synthetic food pigment, being used also as textile industry pigment - red color, belongs to the azo-colorants class is carcinogenic suspicion. Therefore, its fast and reliable assay is essential.

There is considerable interest in specific research to develop performant analytical methods for food and textile industry colors determination. Two electrochemical techniques have been used to characterize P 4R: cyclic voltammetry and differential-pulse voltammetry². The studies have been performed on glassy carbon disk electrodes in buffer solutions at different pH values (3.0-7.0).

Linear dependencies of the anodic and cathodic peaks current on Ponceau 4R concentration are suitable for its determination in soft drinks at mM concentrations.

Both electrochemical methods are suitable for P 4R analysis, although DPV procedure was chosen and successfully applied to the determination of Ponceau 4R in commercially soft drink. P 4R content in the analyzed samples of soft drinks by DPV was within the maximum concentration permitted by law (< 100 mg/L). The results will be used to validate this method for the monitoring the soft drinks market.

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References

1. E. Diacu, C.-P. Ene, Simultaneous Determination of Tartrazine and Sunset Yellow in Soft Drinks by Liquid Chromatography, Chem.Rev. (Bucharest) 60, No. 8, pg. 745-749, 2009
2. E. Diacu, E.-M. Ungureanu, M.-M. Jurcovan, C.-P. Ene, Alexandru-Anton Ivanov, Voltammetric Studies for Detection and Degradation Assessment of some Synthetic Food Dyestuffs. II. Sunset Yellow - E-110, Chem.Rev., Bucharest, Romania, Chem. Abs.: RCBAU 63(6) (535-650) ISSN 0034 -7752, Vol.63, nr.6, iunie 2012.