

A Novel Approach to Assess the Total Antioxidant Capacity (TAC) by Flow Injection Analysis

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Imipramine has widely used as an antidepressant. The oxidation of imipramine can produce a deep blue free radical. A novel method for measuring total antioxidant capacity (TAC) has been developed. The principle is based on generating blue radical with the aim of eliminating the interference color from fruit samples as the blue fruit is rare. The intense blue imipramine radical can be easily scavenged by antioxidant compounds presenting in the samples. The decreasing in the absorption spectrum at 620nm is related to antioxidant capacity and can be detected by spectrophotometer technique. Rapid through puts and reproducibility were improved by cooperating with flow injection analysis (FIA) technique. The variables affecting the signal such as pH, reagent concentrations, flow rate and sample loop were optimized. The linearity was found to be up to 50 mg ascorbic equivalent/L and the relative standard deviation(RSD) was less than 1%. The method was applied for the determination of 22 fruit extracts. The results revealed the different antioxidant capacity in Thai fruits which *Terminalia chebula* Retz. has the most TAC following by *Phyllanthusemblica* Linn. and *Syzygiumcumini* (L.) Skeels, respectively. A good correlation of the present method was observed in good agreement with the traditional method, DPPH at 98%. The developed method was simple, stable, inexpensive, environmental friendly and automated for TAC evaluation.

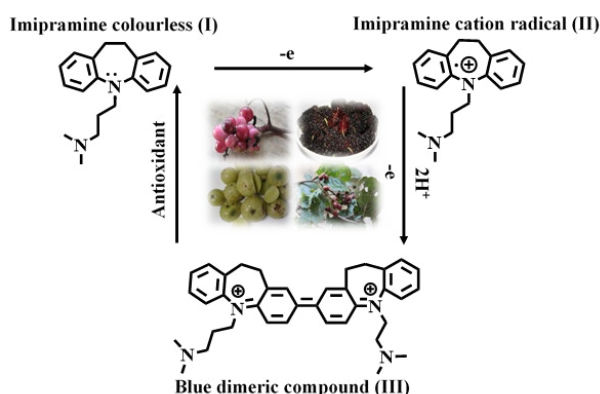


Figure 1. The oxidation of the imipramine starting from the imipramine compound (I) to the cation radical(II) and the final blue dimeric product (III).

Biography:

Dr. Sirirat Panich received her PhD degree from Imperial College London in 2017. She is a lecturer in the Sub division of Chemistry, Division of Science, Faculty of Science and Technology, Rajamangala University of Technology PhraNakhon, Bangkok, Thailand from 2010 to now. Her research interest is the development of analytical method to be a sensor by using flow injection analysis technique especially in pharmaceutical and environmental chemistry.