

extract of rambutan peels (20.52 mg Catechin /g dry weight). The preliminary results of this study showed that the extracts of durian and rambutan peels are rich in compounds with potential antioxidant activity.

Keywords

Antioxidant activity, durian peels, rambutan peels, TPC, TFC

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Complexation between Fe²⁺ and 1,10-Phenanthroline-5-amine and the quenching mechanism

G I P Wijesekera¹, M D P De Costa^{1*}, R Senthilnithy²

¹Department of Chemistry, University of Colombo, Sri-Lanka

²Department of Chemistry, Open University of Sri-Lanka

*Email: mdpdc@chem.cmb.ac.lk

1,10-Phenanthroline and its derivatives are very important chelating bidentate ligands for transition metal ions.¹ From previous studies, it has been investigated that Fe²⁺ make stable complexes with 1,10-Phenanthroline and its derivatives.²

1,10- Phenanthroline-5-amine, which is a derivative of 1,10-Phenanthroline has an increased fluorescence quantum yield than its parent compound. Hence, to develop a fluorimetric method to analyze Fe²⁺, the behavior of 1,10 – Phenanthroline-5-amine in the presence of Fe²⁺ was studied. Furthermore, the limit of detection, limit of quantification and the quenching mechanism were found using a calibration plot between Fe²⁺ and 1, 10 – Phenanthroline-5- amine.

Experiments were carried out in 95% acetonitrile solutions (pH 8.21). Excitation and emission wavelengths were at 267 nm and 515 nm, respectively. The fluorescence peak at 515 nm was quenched by Fe²⁺. The linear range was from 225.5 nM to 2850 nM with a detection limit of 7.8 nM at 3.3σ. Calculated limit of quantification was 235.36 nM.

Temperature effect was an evidence for the static quenching of 1,10-Phenanthroline-5-amine by Fe²⁺. Quenching of the probe by Fe²⁺ at 278K, 288K, 298K, 303K and 313K were studied.

The study showed that 1,10-Phenanthroline-5-amine

can be used as a sensitive fluorescence sensor to detect Fe²⁺ ions in nano molar level. No observable interference is observed upon addition of 225.5 - 2850 nM of Fe³⁺ into 8 μM of 1,10-Phenanthroline-5-amine solutions.

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