Evaluation of Antioxidants Activity of Some Natural Polyphenolic Compounds By using Briggs-Rauscher Reaction

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doi: 10.20964/2019.11.39

Received: 3 July 2019 / Accepted: 19 August 2019 / Published: 7 October 2019

The macrocyclic complex catalyzed Briggs-Rauscher (BR) oscillator was used to determine the antioxidants activity of natural polyphenolic compounds (tannic acid, chlorogenic acid, and luteolin) in this paper. The complex Ni catalyst is donated by $\text{NiL}(\text{ClO}_4)_2$ where the ligand L in the complex is 5,7,7,12,14,14-hexamethyl-1,4,8,11-tetraazacyclotetradeca-4,11-diene. The overall reaction pH was maintained at 2, which is similar to the pH of the human stomach. Experimental results have shown that as per addition of the above antioxidants into the BR system, the temporarily cessation of oscillation was noticed and inhibition time linearly depends on the concentration of antioxidants added. The evaluation of natural polyphenolic compound, antioxidants activity was tested successfully. The three natural polyphenolic compounds tested are tannic acid, chlorogenic acid, and luteolin. In these three natural compounds, the chlorogenic acid was found the most proficient antioxidant. The perturbation mechanism involving $\text{HOO}^\bullet$ radical based on FCA model was suggested.

Keywords: Antioxidants activity, naturally phenolic compounds, Evaluation, Briggs-Rauscher reactions

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