ABSTRACT

A novel, rapid and economical decolorization assay based upon generation of radical cation of promathazine hydrochloride (PMZH) is described for screening of antioxidant activity of plants/herbal extracts. A chromogenic reaction between PMZH and Potassium persulphate in phosphoric acid medium produced a pinkish-red colored radical cation with maximum absorption at 515 nm in its first order derivative spectrum. The solution, after mixing, was left for about 1 hour to get stable absorbance reading at 515 nm. The concentrations of chromagen and potassium persulfate were optimized (final concentration of PMZH and $K_2S_2O_8$ were 0.166 mM and 0.11 mM respectively) for better stability and sensitivity of the radical cation produced. A linear inhibition of color production was observed with increasing amounts of standard antioxidants, with correlation coefficient ranging from 0.989 to 0.999. The antioxidant capacity of *Citrullus colocynthis* (L.) and *Artemisia absinthium* extracts was evaluated using inhibition curve of trolox as standard. The proposed assay involved a more stable radical cation and required only 1 hr for preparation of working solution as compared with ABTS radical cation decolorization assay which shows relatively unstable absorbance readings and requires 12-16 hours for preparation of radical cation solution. Antioxidant and radical scavenging activities of extracts of both the plants were also evaluated using Ferric Reducing Antioxidant Power (FRAP), 1,1-Diphenyl-2-picryl hydrazyl radical ($DPPH^{\cdot}$) scavenging, Total Phenolic Contents (TPC), Total Flavonoid Contents (TFC), Metal Chelating Activity, and Lipid Peroxidation value using Linoleic acid emulsion assays. The results indicate that both *C. colocynthis* (L.) and *A. absinthium* have the ability to prevent lipid peroxidation and radical chain reactions as well as free radical scavenging activity.