

Antioxidant Activity of Some Important Indigenous Plant Foods of the North Eastern Region of India

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Abstract : Antioxidants are substances that can prevent or delay oxidative damage of lipids, proteins and nucleic acids by reactive oxygen species. These help in lowering incidence of degenerative diseases such as cancer, arthritis, atherosclerosis, heart disease, inflammation, brain dysfunction and acceleration of the ageing process. The north eastern part of India falls among the global hotspots of biodiversity. Over the years, the local communities in the region have developed ingenious uses of many wild plants within their environment as food sources. Many of these less familiar foods form an integral part of the diet of these communities, and some are traditionally valued for its therapeutic effects. So the study was carried to estimate the antioxidant activity of some of these indigenous foods. Twenty-eight indigenous plant foods were studied for their antioxidant activity. Antioxidant activities were determined by using DPPH (2, 2-diphenyl-1-picrylhydrazyl) assay, FRAP (Ferric Reducing Antioxidant Power) assay and SOSA (Super Oxide Scavenging Assay). Out of the twenty-eight plant foods, there were thirteen leafy vegetables, four fruits, five roots and tubers, four spices and two mushrooms. Water extract and methanol extract of the samples were used for the analysis. The leafy vegetable samples exhibited antioxidant capacity with IC50 ranging from 8-1414 mg/ml for lipid extract and 34-37878 mg/ml for aqueous extract in DPPH assay. Total FRAP value ranging from 58-1005 mmol FeSO₄ Eq/100g of the sample, which is comparatively higher than the antioxidant capacity of some commonly consumed leafy vegetables. In SOSA, water extract of leafy vegetables show a range of 0.05-193.68 μ mol ascorbic acid equivalent/g of the samples. While the methanol extract of the samples show 0.20-21.94 μ mol Trolox equivalent/g of the samples. Polygonum barbatum, Wendlandia glabrata and Polygonum posumbu have higher antioxidant activity among the leafy vegetables analysed. Among the fruits, Rhus hookerii showed the highest antioxidant activities in both FRAP and SOSA methods while Spondias magnifera exhibited higher antioxidant activity in DPPH method. Alocasia cucullata exhibited higher antioxidant activity in DPPH and FRAP assays while Alpinia galanga showed higher antioxidant activity in SOSA assay when compared to the other samples of roots and tubers. Elsholtzia communis showed high antioxidant activity in all the three parameters among the spices. For the mushrooms, Pleurotus ostreatus exhibited higher antioxidant activity than Auricularia delicata in DPPH and SOSA. The samples analysed exhibited antioxidant activity at varying levels and some exhibited higher antioxidant activity than the commonly consumed foods. So consumption of these less familiar foods may play a role in preventing human disease in which free radicals are involved. Further studies on these food samples on phytonutrients and its contribution to the antioxidant activities are required.

Keywords : antioxidant activity, DPPH, FRAP, SOSA

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