



Section E2

601/E2

Correlation between the *in vitro* antioxidant activity of *Osbeckia aspera* and its polyphenol content

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Cellular damage from reactive oxygen species (ROS) is the fundamental mechanism underlying a number of human diseases or disorders. The literature reveals that ROS can be scavenged by natural antioxidants from medicinal plant extracts. An aqueous extract of *Osbeckia aspera* (*Sinh. Heen bovitiya*) is used to treat hepatitis and diabetes mellitus in traditional medicine. In order to investigate the pharmacological mechanisms of bioactivity of the aqueous leaf extract of *O. aspera*, the water phase antioxidant activity was determined in relation to its polyphenol content.

The total antioxidant activity was evaluated by DPPH (2,2-diphenyl-2-picrylhydrazyl hydrate) assay, FRAP (ferric reducing antioxidant power) assay and nitric oxide radical inhibition assay with L-ascorbic acid as the reference compound. The total polyphenol content was determined according to the Folin-Ciocalteu method. The antioxidant activity is expressed as IC₅₀ in DPPH and nitric oxide scavenging assays. The IC₅₀ of the aqueous extract of *O. aspera* in DPPH assay and in nitric oxide scavenging assay was $111.54 \pm 6.99 \mu\text{gcm}^{-3}$ and $151.679 \pm 8.86 \mu\text{gcm}^{-3}$ respectively. The FRAP value was 13.26 ± 2.40 . Total polyphenol content of *O. aspera* was 14.96 ± 2.92 GAE (Gallic acid equivalents) mgg^{-1} . The reference values in the DPPH assay, FRAP assay and nitric oxide radical inhibition assay were 6.97, 2 and $19.33 \mu\text{gcm}^{-3}$ respectively. The aqueous extract of *O. aspera* exhibited a significant antioxidant activity measured as scavenging of DPPH radical, nitric oxide radical and reducing power. A positive correlation of ($r = 0.826, 0.892, 0.869$) between the antioxidant activity and phenol content was found in the DPPH assay, FRAP assay and NO inhibition assay, respectively. Results suggest that the antioxidant capacity of the aqueous plant extract is due to the large proportion of their polyphenols. Furthermore the determination of total phenol content is of interest for a comparative evaluation of *in vitro* antioxidant potential but it needs to be combined with *in vivo* data for adequate assessment of the antioxidant capacity of the aqueous leaf extract of *O. aspera*.

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