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Evaluation of antioxidant capabilities of methanolic crude extract and its individual fractionates of mucuna pruriens seeds using in vitro assay models

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Plant secondary metabolites, such as phenolic, flavonoids, tannins, alkaloids, terpenoids etc. are important bioactive compounds. Free radicals, or oxidants are accountable for various dreadful diseases, including cancer, cataracts, diabetes, Parkinson's disease, Alzheimer's disease, ischemia, premature aging, arthritis, wrinkling of skin and so on. Antioxidants can act as hydrogen or electron donors, free radical scavengers, metal chelators, and singlet oxygen quenchers. Plant phenolics/flavonoids are good source of natural antioxidants. *Mucuna pruriens* (velvet bean) seed is known for its manifold pharmacological capabilities and of great interest on biomedical research. The current research was performed to assess in vitro antioxidant capabilities of methanolic crude extract (MCE) and its individual fractionates, such as petroleum ether fraction (PEF), chloroform fraction (CHF), ethyl acetate fraction (EAF), and Dia-ion resin adsorbed fraction (DF) of *Mucuna pruriens* seeds by using DPPH• scavenging, total antioxidant capacity, reducing power capacity, total phenolic content and total flavonoid content assays. In DPPH free radical scavenging capacity, MCE, CHF, EAF, and DF demonstrated powerful antioxidants as compared to standard BHT. EAF exhibited highest DPPH• scavenging activity with IC₅₀ value 3.50 g/ml amongst all tested samples. While the IC₅₀ value of BHT was found to have 17.50 g/ml. Also, in total antioxidant activity, EAF showed highest activity than standard (+)-catechin, and other tested samples. Besides, among the fractionates, EAF revealed potent reducing power capacity as compared to reference standard L-ascorbic acid. Moreover, among the testing samples for total phenolic and total flavonoid contents, EAF contained the higher amount of phenolic and flavonoid compounds 31.420±0.218 mg of GAE/g of sample and 46.797±0.571 mg of Cat.E/g of sample, respectively. These bioassays showed dose dependent capability. These investigations have proved that *M. pruriens* seeds have remarkable antioxidants characteristics.

Biography

Shahed Zaman completed his PhD degree from Yamagata University of Japan in 2004. He also did postdoctoral study from the same university. His PhD research was on natural product chemistry. Now he has been engaged in natural and synthetic organic chemistry research work. A number of PhD/MS students have been working in his research laboratory. He has published more than 25 scientific articles in reputed journals.

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