

Determination of Antioxidant Activities, Bioactive Components and Minerals Content of *Foeniculum vulgare* (fennel) (ဖုခ်ဖုခ်) seeds

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Abstract

World Health Organization estimated that more than 80 % of world's population consumes indigenous medicinal plants in direct and indirect ways to treat their diseases. The medicinal value of plants have assumed more important dimension in the past few decades owing largely to the discovery that extracts from plants containing not only minerals and primary metabolites but also a diverse array of secondary metabolites with antioxidant potential. Medicinal plants are potential sources of natural compounds with biological activities and therefore attract the attention of researchers worldwide. Antioxidants are vital substances which possess ability to protect the body from damage caused by free radical induced oxidative stress. Micronutrient malnutrition is a major global health concern because its deficiency in the body is linked with ill health and diseases. The purpose of current study was to determine antioxidant activities, bioactive components and minerals (macrominerals; Ca, Mg, Na, K and microminerals; Cu, Fe, Mn, Zn) from *Foeniculum vulgare* (fennel) (ဖုခ်ဖုခ်) seeds by using UV Visible Spectrophotometer (UV-Vis), Gas Chromatography-Mass Spectrometry (GC-MS) and Atomic Absorption Spectrophotometer (AAS). The antioxidant activity of aqueous extract (IC₅₀: 0.28ug/ml) of fennel seeds was showed more activity than ethanolic extract (IC₅₀: 0.83ug/ml) and comparable to well-known antioxidant, ascorbic acid. (IC₅₀:0.59 ug/ml). GC-MS analysis was fruitful in identification of compounds and based on peak area, retention time, molecular formula, molecular weight, MS Fragment-ions and pharmacological actions. Ten bioactive phytochemical compounds from aqueous extracts and 11 from ethanolic extract of fennel seeds were identified. Macrominerals content of fennel seeds were comparable with other studies and content of microminerals were within permissible limit of vegetables and fruits set by FAO/WHO, 2001. These findings indicated that, fennel seeds have potential to provide nutrients to human beings, preventive properties against oxidative damage. The results will give scientific information for herbal medicine users, local practitioners and pharmaceutical industries using fennel for different types of ailments.