

1. Determination of Antioxidant Activities, Bioactive Components and Minerals Content of *Foeniculumvulgare*(fennel)(ဖန်ဖန်)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 (macronutrients; Ca, Mg, Na, K and micronutrients; Cu, Fe, Mn, Zn) *Foeniculumvulgare*(fennel) (ဖန်ဖန်) seeds by using UV Visible spectrophotometer (UV-Vis), Gas chromatography-mass spectrometry (GC-MS) and Atomic absorptionspectrophotometer (AAS). The antioxidant activities of aqueous extract of fennel seeds (IC₅₀: 0.28ug/ml) and ethanolic extract (IC₅₀: 0.83ug/ml) were 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 ethanolic extract and 8 from aqueous extracts of fennel seeds were identified. Macronutrients content of fennel seeds were comparable with other studies and content of micronutrients 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. These results will give scientific information for herbal medicine users, local practitioners and pharmaceutical industries using fennel for different types of ailments.