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PHYTOCHEMICAL INVESTIGATION AND ANTIOXIDANT ACTIVITY OF EXTRACTS OF SOME MEDICINAL PLANTS

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ABSTRACT

In current study, we accepted out a systematic record of the relative antioxidant activity in selected medicinal plant species extracts. The total phenol varied from 25.3±7 to 278.4±7 mg g⁻¹ in the extracts. Flavonoid contents were between 56±4.4 and 80.3±3.7. 1, 1-diphenyl-2-picryl hydrazyl (DPPH) radical scavenging result of the extracts was determined spectrophotometrically. The maximum radical scavenging consequence was observed in *Metha pulegiam* (Lamiaceae) with IC₅₀ = 0.018 mg ml⁻¹. The strength of radical scavenging power of *Metha pulegiam* extract was about 4 times better than synthetic antioxidant butylated hydroxy toluene (BHT). The superior amount of phenolic compounds leads to further potent radical scavenging result as shown by *Metha pulegiam* leaves extract.

Keywords: *Metha pulegiam*, phytochemical investigation, Antioxidant activity, *Pargularia daemia*

INTRODUCTION

Free radicals donate to more than one hundred disorders in humans counting atherosclerosis, arthritis, ischemia and reperfusion damage of numerous tissues, central nervous system injury, gastritis, cancer and AIDS (Kumpulainen and Salonen, 1999; Cook and Samman, 1996). Free radicals due to ecological pollutants, radiation, chemicals, toxins, profound fried and spicy foods as well as corporeal stress, cause exhaustion of immune system antioxidants, modify in gene expression and persuade abnormal proteins. Oxidation development is one of the most imperative routs for producing free radicals in food, drugs and still living systems. Catalase and hydroperoxidase enzymes change hydrogen peroxide and hydroperoxides to nonradical forms and purpose as natural antioxidants in human body. Owing to depletion of immune system natural antioxidants in dissimilar maladies, overwhelming antioxidants as free radical scavengers may be essential (Halliwell, 1994; Kuhn, 1976; Kumpulainen and Salonen, 1999; Younes, 1981). At present available synthetic antioxidants similar to butylated hydroxy anisole (BHA), butylated hydroxy toluene (BHT), tertiary butylated hydroquinone and gallic acid esters, have been supposed to cause or punctual negative health effects. Consequently, strong restrictions have been placed on their application and there is a trend to substitute them with naturally occurring antioxidants. Furthermore, these synthetic antioxidants also show low solubility and reasonable antioxidant activity (Barlow, 1990; Branen, 1975). Recently there has been an increase of interest in the therapeutic potentials of medicinal plants as antioxidants in dropping such free radical induced tissue injury. Polyphenolic compounds with known properties which include free radical scavenging, inhibition of hydrolytic and oxidative enzymes and

anti-inflammatory action (Frankel, 1995). A number of confirmations suggests that the biological actions of these compounds are related to their antioxidant activity (Gryglewski *et al.*, 1987). An easy, rapid and sensitive method for the antioxidant screening of plant extracts is free radical scavenging assay using 1,1-diphenyl-2-picryl hydrazyl (DPPH) stable radical spectrophotometrically. In the occurrence of an antioxidant, DPPH radical obtains one more electron and the absorbance decreases (Koleva *et al.*, 2002). In particular, despite extensive use of wild plants as medicines in Iran, the prose contains few reports of antioxidant activity and chemical composition of these plants. In current study, we carried out a systematic record of the relative free radical scavenging activity in selected medicinal plant species, which are being used traditionally: The leaves of *Metha pulegiam* (Lamiaceae) and seeds of *Pargularia daemia* (Apocynaceae). We have also found the relationship of total flavonoid and phenol contents with antioxidant activity. In the longer term, plant species (or their active constituents) recognized as having high levels of antioxidant activity *in vitro* may be of value in the design of additional studies to unravel novel treatment strategy for disorders connected with free radicals induced tissue damage. Besides well known and traditionally used natural antioxidants from tea, wine, fruits, vegetables and spices, some natural antioxidant (e.g. rosemary and sage) are already exploited commercially either as antioxidant additives or a nutritional supplements (Schuler, 1990). Also many other plant species have been investigated in the search for novel antioxidants (Chu, 2000; Koleva *et al.*, 2002; Mantle *et al.*, 2000; Oke and Hamburger, 2002) but generally there is still a demand to find more information concerning the antioxidant potential of plant species. It has been mentioned the antioxidant activity of