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Abstract

Effect of growth stages on total phenolics content and antioxidant activity of *Fumaria vaillantii* L.

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Background and objectives: Plant extracts and their constituents are known to exert biological effects, especially antioxidant activity. *Fumaria vaillantii* (Fumariaceae) has several therapeutic effects in traditional medicine. Antioxidants are able to protect the human body from oxidative damage connected to the reaction of free radicals. Synthetic antioxidants have toxic and carcinogenic effects on human health; therefore, their application has been limited. Thus, there has been an increasing interest in the natural antioxidant compounds to prevent the foods from deterioration. In this study, the antioxidant activity of *F. vaillantii* extracts at three stages of growth has been evaluated. **Methods:** The ethanol extracts from the aerial parts of the plants at different phenological stages were prepared and the total phenolics content was determined by Folin-Ciocalteu reagent. Also, the antioxidant activity were determined by three methods as 2,2-diphenyl-1-picrylhydrazyl (DPPH), ferric-ion reducing antioxidant power (FRAP) and phosphomolybdenum complex tests. All experiments were carried out in triplicate, and data were subjected to ANOVA according to the SAS software. **Results:** Total phenolics content of vegetative, budding and flowering stages were 68.38, 71.11 and 56.42 mg GAE/g extract, respectively. Although flowering stage showed the highest antioxidant activity in phosphomolybdenum complex, in DPPH and FRAP methods, it decreased from vegetative to flowering stages. **Conclusion**: According to the results, the Iranian *F. vaillantii* extract from vegetative stage was a potential source of natural antioxidants for food and pharmaceutical industries that can be used in different industries.

Keywords: DPPH radicals, FRAP, fumitory, growth stage

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