A Study on Nutritional Values and Some Bioactivities of the Leaf *Mentha arvensis L.*

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Abstract

Mentha arvensis L. (pusi-nan in Myanmar) belonging to the family of Lamiaceae, is a small to moderate sized perennial herb. It possesses potential phytochemicals which play an important role in the production of pharmacy, food, flavor, ointment, and the associated industries. The present research aimed to study the nutritional values and some bioactivities of the leaf *M. arvensis* L. Firstly, phytochemical constituents of the leaf *M. arvensis* were investigated by the reported chemical methods. The qualitative elemental analysis was done by EDXRF technique. When the nutritional values of the sample were determined by AOAC methods, it was found that it contains 4.80 % moisture, 8.72 % ash, 1.27 % fat, 22.70 % protein, 13.60 % fiber, 48.91 % carbohydrate and energy value 297.87 kcal/100 g. *In vitro* DPPH radical scavenging assay was used to evaluate the antioxidant activity of ethanol and water extracts from the leaf of *M. arvensis*. Ethanol extract (IC_{50} 53.09 μg/mL) and water extract (IC_{50} 126.77 μg/mL) showed antioxidant activity in the DPPH assay compared to the standard antioxidant ascorbic acid (IC_{50} 3.43 μg/mL). Antimicrobial activity of ethanol and water extracts was also investigated by agar well diffusion method on eight microorganisms such as *Agrobacterium tumefaciens*, *Bacillus pumilus*, *Bacillus subtilis*, *Candida albicans*, *Escherichia coli*, *Micrococcus luteus*, *Pseudomonas luteus*, and *Staphylococcus aureus.* The results showed that all tested microorganisms were susceptible to both extracts. In addition, a brine shrimp lethality assay was used to study the cytotoxicity effects of ethanol and water extracts. Ethanol and water extracts exhibited lethality against the brine shrimp nauplii with LD_{50} values of 107.79 μg/mL and 250.27 μg/mL, respectively. According to the overall observation, the leaf *M. arvensis* possesses antioxidant, antimicrobial and cytotoxicity properties that can be used as an ingredient in traditional medicine.

Keywords: *Mentha arvensis* L., phytochemicals, EDXRF, nutritional values, antioxidant activity, antimicrobial activity, cytotoxicity activity

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