EVALUATION OF ANTIFUNGAL EFFECTS OF ETHYL ACETATE EXTRACT OF *ORIGANUM MAJORANA* L. AGAINST THREE STRAINS OF FUNGI

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Fungi due to their characteristics can be an agent to cause diseases. Many diseases are responsible to increase susceptibility of body to many infections which has been seen in diseases such as loss or deficiency in human immune system (AIDS) or organ transplantation and neoplastic diseases [1]. Furthermore, fungal spoilage is one of the major problems of food industry [2]. Today, researchers are interested in using plant substances as antifungals. Marjoram (*Origanum majorana* L.) because of a wide range of flavonoid compounds [3], propose to be a good candidate for this purpose. Therefore, in this study, antifungal activity of marjoram extract was evaluated against *Alternaria* spp, *Aspergillus* spp and *Penicillium* spp isolated from environment samples. Powdery form of leave and flowers of marjoram was purchased from Barij Esans Institute. Then, extraction of them was achieved by using soxhelet method as well petroleum ether, diethyl ether and methanol 80% in three stages. After acid hydrolysis, extract was separated in two phases of ethyl acetate and water. The minimum inhibitory concentration (MIC) and the minimum fungicidal concentration (MFC) were assayed according to CLSI protocol. Results showed that ethyl acetate extract has a good ability to inhibit fungal growth. MIC and MFC of total flavonoids was 0.202 µg/ml for *Penicillium* spp and *Aspergillus* spp, although MIC and MFC for *Alternari* spp was two fold (0.404 µg/ml). Further investigation should be carried out to assay antifungal activity *in vivo* experiments. It can be concluded that extract of marjoram had excellent antifungal activity against three used fungal strains and can be used as a new chemical to remove or control this kind of fungal infections.

References

[1] Denning, D. W.; *Clinical Infectious Diseases*. **1998**, *26*, 781–803.
[2] Valik, L.; Baranyi, J.; Gorner, F. *International Journal of Food Microbiology*. **1999**, *47*, 141-146.
[3] Kawabata, J.; Mizuhata, K.; Sato, E.; Nishioka, T.; Aoyama, Y.; Kasai, T. *Journal Bioscientic, Biotechnology, Biochemistry*. **2008,** *67*: 445- 447.

EFFECT OF PLANTING DATE, WEED CONTROL TIME AND METHOD ON WEED POPULATION AND YIELD OF CUMIN (*CUMINUM SYMINUM* L.)

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In order to evaluation the effect of planting date, method and date of weed control on weed population and cumin yield an experimental was conducted in the experimental research field, Faculty of Agriculture, Shirvan University, during 2010. Treatments included planting date (30 December, 20 January and 30 February), weeding date (first true leaf, start of branching and beginning of flowering stages) and weed control methods (hand weeding, fire treatment and control). The results showed that there were significant differences between different sowing date, as the highest yield was in 30 December and the lowest was in 30 February. It showed that there were significant differences between hand weeding, control and fire treatments. The highest and lowest yield of cumin seed was obtained in hand weeding and control methods respectively. There were no significant differences in start of branching stage, beginning of flowering stages and first true leaf stage in different times of weed control but the highest cumin seed obtained in start of branching. There were significant differences in number of weeds between different sowing dates. The highest number of weeds was obtained in 11 December. Also, the lowest number of weeds was obtained in 20 January. There were significant differences in height of weeds between different sowing dates. The highest and lowest height of weeds was obtained in 11 December and 29 February respectively. Total numbers of weed species were 13 from 10 different plant families. Number of dicotyledons species (12) were more than monocotyledons (1) [1, 2].

References

[1] Mutch. D. R.; Thalmann, S. A.; Martin. T, E.; Baas, D. G. *Michigan State University bulletin E-3035*. 2008.
[2] Chaudhary, G. R. *Indian Journal of Agricultural Science*. **1989**, *59,397-399*.