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Allelopathic Effects of Fleabane Species (*Inula viscosa* and *I. graveolens*) *on* Seed Germination of Some Weed Species

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Abstract

Weeds are one of the most important obstacles for crop production. Therefore, the control of weeds is of great importance. Chemical control is the first preferred method for this purpose and herewith herbicides are the most widely used pesticide group in the world.Herbicides carry risks in terms of human health and environment as they are in other synthetic pesticides. Because of that, investigations of alternative weed control methods are great importance. One of these alternative methods is using natural allelochemicals instead of synthetic herbicides for weed control. In this study, water extracts of two fleabane species (*Inula viscosa* (L.) Aiton.and*Inula graveolens* (L.) Desf.)are used to determine the effects on germination of some weed species. *I. viscosa* and *I. graveolens* are aromatic plants from Asteracea family and they are very common in Mediterranean region. *Vicia sativa* L. (common vetch), *Amaranthus retroflexus* L. (redroot pigweed) and*Portulaca oleracea* L. (purslane) are very harmful weed species and their seeds were used in the study. Water-extracts of fleabane species were obtained by keeping in pure water for 7 days at 4°C. For this purpose, flowering stems of fleabane species were collected in October 2016. The extract prepared in 1/10 ratio was filtered and diluted by pure water. Consequently, solutions were prepared at 50%, 75% and 100% concentrations and applied 10 ml for each petri dish. Only pure water was used for control. As a result of the experiment, *I. viscosa* was found more efficient than *I. graveolens*. All three species of weed were also affected from *I. viscosa* at different rates depending on dosage. Water extract of *I. viscosa* reduced germination ratio of redroot pigweed much more than others. Germination ratio of redroot pigweed decreased by 97%, 98% and 99% in the solution of 50%, 75% and 100% respectively. Concentrations of only 75% and 100% of the extract *I. graveolens* were effective on *A. retroflexus*. Other weed species were not affected by water extract of *I. graveolens*. *A. retroflexus* was determined to be more sensitive to water extracts of fleabane species than others. The results should be supported by field study.

Keywords: Allelopathy, Essential oil, Bio-herbicide