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Allelopathic effects leachate extracts of an invader plant species (*Lythrum salicaria* L.) on seed germination and seedling growth of lettuce

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Abstract

Lythrum salicaria is an invader plant species lives in wetland areas. But the mechanism of its invading property is not known yet. This species may have some toxic allelochemicals and may exudes them into the environment. Thus, it may suppress the growth of neighbour plants and so that it may invades the habitat. The release of allelochemicals from plants occur by exudation from roots, leaching and volatilization from leaves, and degradation of dead plant parts. The aim of this study was to reveal allelopathic effect of *L. salicaria* on lettuce (*Lactuca sativa* L.) as a test plant. Effects of leachate extracts on seed germination and seedling growth of lettuce seeds were investigated in Petri dishes at 25°C. The seeds were collected from the plants along Porsuk river, Kütahya and were sowed into the pots filled with soil and placed in a pool filled with water in a greenhouse. The plants were grown in this conditions until to have about 30 leaves then brought to laboratory and root, shoot and leaves of the plants were separated. 10 g of plant parts were lefted in 100 ml distilled water and kepted at 25°C in an incubator for 1,3,5,7,15 and 30 days to obtain leachate extracts. The lettuce seeds were germinated in Petri dishes at 25°C in distilled water as control or in the extracts obtained from different parts of *L. salicaria* plants. Germination of lettuce seeds were recorded at day 10 and length and weights of the

seedlings were also measured. In conclusion; although lettuce seed germination was not significantly affected by the extracts, root and shoot elongation and fresh and dry weights of lettuce seedlings were significantly decreased by the extracts. Especially, the extracts obtained from 15 and 30 days kept *L. salicaria* plant parts were seen to have more growth inhibitory effect. As a result, invading property of *L. salicaria* may be originated from its dominant allelopathic effect.

Keywords : Allelopathy, Germination, Lettuce, *Lythrum salicaria*, Seedling growth

General area of research : Biology