

## EFFECTIVENESS OF CELERY LEAF EXTRACT ON THE INDUCTION OF RESISTANCE AGAINST CUCUMBER POWDERY MILDEW \*

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### Abstract

Powdery mildew, caused by *Podosphaera fusca*, is an important disease of cucumber, which is commonly controlled by fungicide application. The side effects of fungicides, however, necessitate searching for other control methods, including induction of disease resistance in the host plant. In this research, the effect of the celery leaf extract (CLE) on cucumber powdery mildew and possible induction of systemic resistance in the host plant was studied by greenhouse tests. The acetonic, methanolic, or water extracts of celery leaf tissues at concentrations of 1% and 5% (w/v) were sprayed on the host plants at either 1 day before, or 1 day after pathogen inoculation. The disease severity was evaluated based on the number of disease spots per leaf, ten days after inoculation. The effect of CLE on systemic control of the disease, germination of pathogen spores, and activity of  $\beta$ -1,3-glucanase (in the CLE -treated cucumber plants, with or without pathogen inoculation, and the non-treated control plants) were also studied. The results showed that CLE controlled the disease on the treated true leaf locally and the acetonic extract at a concentration of 5% showed higher efficacy in the disease control. Application of CLE was not effective on pathogen spore germination and it shows that control of cucumber powdery mildew by CLE was likely via resistance induction in the plant rather than its fungicidal effect. On the other hand, changes in  $\beta$ -1,3-glucanase specific activity in different treatments did not show any correlation with the disease control. Thus it seems that  $\beta$ -1,3-glucanase activity has not an specific role in this resistance induction, and it is necessary to investigate another probable mechanisms involved in inducing resistance.

**Keywords:** *Podosphaera fusca*, Induced resistance, Plant extract,  $\beta$ -1,3-glucanase enzyme.

See Persian text for figures and tables (Pages ۱۵۱-۱۶۱).

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