

Abstract

Cucumber is an annual plant scientifically named *Cucumis sativus* which belongs to cucurbitaceae family. Soil borne diseases such as *Phytophthora melonis* cause to reduce economy significantly on cucumber farms and green houses. The research was performed to survey the effect of bio-phosphor and bio-subtil biologic fertilizers on the amount of expressing genes changes and activity level of defend enzymes and as a result, controlling bush-damping of *Phytophthora melonis* in cucumber. It was considered four repeats for each care and experimental data were performed as factorial in the form of a completely random plan. The bushes were inoculated with the disease factor in a three-leaf stage. Data were analyzed using SPSS software and the cares mean were compared using LSD test in %5 probability level. The results showed that all cares had a significant difference with the witness sample. In order to survey resistance molecular mechanism of cucumber seedlings against disease, Changes in expressing the genes were measured using qRT-PCR method. Data were analyzed by method pffafl and the extent of expressing considered genes were surveyed for all cares. The results of surveying the activity of anti-oxidant enzymes in under tension plants showed that the fertilizers caused to increase significantly the activity of peroxidase, polyphenol oxidase, total phenol and total protein toward the witness plants. The results of molecular analysis represented an increase in expressing Lipoxygenase, cupi4, PAL, Galactinol synthase genes in polluted cucumber after being inoculated with bio-phosphor and bio-subtil biologic fertilizer. The results demonstrated that cares including bio-phosphor had more increasing effect than other cares on anti-oxidant enzymes activities and expressing the genes. The research results show clearly that biologic fertilizers can be used as a healthy, effective and safe managerial strategy for environment to control cucumber bush-damping disease in green house.

keywords: biological fertilizers, expressing Resistance genes, defend-associated enzymes, inducing resistance, cucumber bush-damping , *Phytophthora melonis*.



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**The effect of bio-fertilizer (Biophosphur and Biosubtyl) on induction
resistance of cucumber to damping-off disease caused by *Phytophthora
melonis***

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