Abstract

Cucumber Mosaic Virus (CMV) a plant pathogenic virus containing a wide rang of host. Insecticides has no effect on vector control in sustainable viruses. As induction of plant defense mechanisms has no negative effect on environment, it is crucial to be used to supprese the disease. Three different combination including salicylic acid (0, 70, 140 and 210 ppm), chitosan (0, 500, 1,000 and 1,500 ppm), mixture of salicylic acid and chitosan (0, 70 +500, 140 + 1000, 210 + 1500 ppm) on physiological, biochemical, disease severity and virus concentration was investigated in greenhouse through spraving on seedling at two foliage stages, using a completely randomised design whit three replicates. The experiment also was performed on benchmark plant, red album (Chenopodium amaranticolor). For this purpose, detection and purification of CMV from samples collected from the cucumber fields of Khorasan Razavi. The results of ELISA test and polymerase chain reaction proved that the virus exist in proliferative plants. Concentration of virus and disease severity in infected plants was 1.086, 92.53 respectively. The lowest amounts of virus concentration and disease severity were estimated 0.46 and 33.3, 0.393 and 40.7, and 0.361 and 14.8 for chitosan, salicylic acid, and mixture of salicylic acid and chitosan treatments, respectively. Also in the next step, the measurement of changes in the amount of total protein and peroxidase activity 3 weeks after inoculation of CMV virus from the youngest leaves was done. The results showed that all treatments made a significant increase in total protein and peroxidase enzyme than control. The results of these treatments increased foliar application cucumber plant resistance against the CMV virus. Mixture of salicylic acid and chitosan (1500 + 210 ppm) had also the best result on reduction of virus concentration and disease severity percentage.

Keywords: ELISA, Peroxidase, Polymerase chain reaction, Total protein



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Effect of stimulator compounds in induced systemic resistance in

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