

Effect of aqueous ClO₂ treatment to phytophthora blight on Hot Pepper

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[Introduction]

One of many *Capsicum annuum* species, hot pepper is important cash crop and is commercially cultivated in many countries which is located in tropical or subtropical areas like Mexico, China, Korea, East Indies, USA, and many countries of the Indian sub-continent. *Phytophthora capsici* which is a major limiting yield of hot pepper is oomycete pathogen which causes phytophthora blight. Objective of this study is inducing resistance to phytophthora blight on pepper by provoke reactive oxygen species reaction which is related to hot pepper immune system by treating chlorine dioxide (ClO₂), which have been used in water disinfection and pesticide.

[Materials and Methods]

To identify resistance inducing of aqueous ClO₂ treatment, *P. capsici* was inoculated at the rate of 10 zoospores and 25 zoospores per soil g each. Then, three different concentration (10 ppm, 20 ppm, and 100 ppm) of aqueous ClO₂ were treated to 4 weeks hot pepper (*Capsicum annuum*). Disease severity was separated from 0 to 5 according to disease symptom, and mean disease severity value was the average value of ten plants each.

[Results and Discussions]

In low disease severity inoculation, 10 *P. capsici* zoospores per soil g, a considerable number of plants didn't express disease symptom. This can be interpret that the number of zoospore was not enough to evoke phytophthora blight or ClO₂ treatment suppressed phytophthora blight development. In medium disease severity inoculation, 25 *P. capsici* zoospores per soil g, disease symptom when treated 10 ppm ClO₂ treatment was suppressed significantly compared to control one at $P < 0.05$ from 4 DAI to 10 DAI. This result suggests that ClO₂, an oxidant, treatment can provoke disease resistance. More research about ClO₂ treatment how influence on the disease expression of hot pepper like gene expression related to immune system of the hot pepper is needed.

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