

PC-05

Chlorine Dioxide Treatment for Control Phytophthora Blight on Pepper Plants

Hye Ji Lee¹, Gyung Deok Han¹, Bo Hwan Kim¹, Wook Kim^{1*}

¹Dep. of Biosystems and Biotechnology, Korea Univ, Seoul 02841, Korea

[Introduction]

Pepper (*Capsicum annuum*) is an important crop in Korea. Because of the rainy season in Korea, phytophthora blight by *Phytophthora capsici* on pepper frequently damaged the pepper and reduced production. Chlorine dioxide (ClO₂) has strong oxidation and penetration, but it is easy to degradation. To control the digestive disease, phytophthora blight, aqueous ClO₂ was treated to pepper. Our first hypothesis is the treatment of aqueous ClO₂ reduces the density of zoospore in the soil. Also, the second hypothesis is the treatment acts as transient oxidative stress to pepper plant, thereby increasing the abiotic and biotic stress resistance. In this experiment, to verify the first hypothesis, we set a ClO₂ concentration suitable for plant treatment and confirm the effect of that concentration of ClO₂ to zoospore of *P. capsici*.

[Materials and Methods]

At first, we treated aqueous ClO₂ to pepper seeds and seedling to confirm the concentration does not affect to pepper viability. The high concentration, 100 ppm, medium concentration, 20 ppm, and low concentration, 10 ppm was treated to pepper seeds and seedling. After that, the same concentrations of aqueous ClO₂ was treated to zoospore of *P. capsici*. Moreover, finally, we inoculated zoospores to 3 leaf stage pepper planted soil. And observe disease development for two weeks.

[Results and Discussion]

The high concentration, 100 ppm, damaged the seed that resulted in low germination and damaged to seedling root tip. And The medium concentration, 20 ppm, and low concentration, 10 ppm, did not affect seed and seedling viability. At zoospore experiment, 100 ppm, of aqueous ClO₂ treatment reach control 100% of zoospore. And final plant test showed that the ClO₂ treatment could slow the development of disease by reducing zoospore density.

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*Corresponding author: Tel. +82-3290-3482, E-mail, kwook@korea.ac.kr