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Antifungal Activity of Chrysoeriol 7 and Cochlioquinone 9 from Riec (*Oryza sativa* L.) Inoculated with WBPH

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[Introduction]

Rice (*Oryza sativa* L.) is the main food crop for more than 50% of the world's population. however, rice is easily attacked by pests and pathogens. Agriculture is dependent on chemical fertilizers and organic synthetic pesticides. As the problems of pesticides have begun to emerge around the world, research to explore eco-friendly materials has been actively conducted. In this research, we extracted of Chrysoeriol 7 (C7) and cochlioquinone 9 (C9) from rice, and investigated the antimicrobial activity against rice pathogens to judge the possibility of use as an environmentally friendly biopesticide.

[Materials and Methods]

Cheongcheong, Nagdong and TN1 were used for plant materials. 2 bacteria and 11 fungi that causing rice disease were used to test the antimicrobial activity. 2~3 leaves time of rice were inoculated with 2~3 instar WBPH for a week and leaves were cut. And then C7 and C9 were extracted using MeOH. After analysis by LC-MS, it was applied at different concentrations to the medium (bacteria; LB, fungi; PDA). The diameter of bacterial and fungal growth was measeured at 1 and 2 weeks after cultured. Bacterial 16S and fungal ITS sequences were used for construction of the phylogenetic tree.

[Results and Discussion]

C7 showed antifungal activity against *Fusarium graminearum* and *Pythium graminicola*, and C9 showed antifungal activity against *Cladosporium herbarum, C. cladosporioides and Gibberella zeae, F. graminearum* and *P. graminicola*. In the phylogenetic tree*, G. zeae* and *F. graminearum* had similar sequences, and both cause scab in rice. *C. herbarum* and *C. cladosporioides* also had sequences similar to each other. These are a genus of *Cladosporium* that cause spotting symptoms on crops. These results show that C7 and C9, which are resistant to WBPH, are effective against plant pathogens and can be developed as an eco-friendly pest and disease biopesticide.

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