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Antimicrobial Activity of Compounds from Rice (*Oryza sativa* L.) Inoculated with WBPH

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[Introduction]

As the damage caused by pesticides appears worldwide, eco-friendly cultivation area is increasing, and accordingly, research to explore eco-friendly materials has been actively conducted. In this research, we extracted of C7 (chrysoeriol) and C9 (cochlioquinone), which are resistant to whitebaced planthopper (WBPH), from rice (*Oryza sativa* L.), 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. In the antimicrobial activity test, 2 bacteria and 11 fungi that causing rice disease were used. 2~3 leaves time of rice were inoculated with 2~3 instar WBPH for 1 week and leaves were cut. And then C7 and C9 were extracted using MeOH. After confirming the material by LC-MS, it was diluted with distilled water and applied to the medium (bacteria; LB, fungi; PDA). The growth was measeured at 1 and 2 weeks after bacteria and fungi were inoculated. Bacterial 16S and fungal ITS sequences were used for construction of the phylogenetic tree in the MEGA X program.

[Results and Discussion]

Antimicrobial activity test showed that C7 had antifungal activity against *Fusarium graminearum, Pythium graminicola*, and C9 had antifungal activity against *Cladosporium herbarum, Cladosporium cladosporioidesand Gibberellagenus Gibberellazeae, Fusarium graminearumand and Pythium graminicola*. But it had a low activity of 1-3 mm in *Cladosporium herbarum*. In the phylogenetic tree, *Gibberella zeae* and *Fusarium graminearum* had similar sequence and cause scab in rice. *Cladosporium herbarum* and *Cladosporium cladosporioides* also had similar sequence. They are a genus of *Cladosporium* that causes spotting symptoms on crops. *Pythium graminicola* is a plant pathogen that infects grains such as barley, wheat, rice, and beans. This results show that C7 and C9, which are resistant to WBPH, are also effective against plant pathogens and can be developed as an eco-friendly pest and disease pesticide.

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