Diversity and Effect of Endophytic Fungi Isolated from Conifers on Growth Inhibition of Pathogenic Micro-Organism

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Endophytic fungi are a harmless symbiont of plants and provide environment-stress tolerance to their host plants. We collected leaf samples of 4 conifer species Abies koreana, Juniperus rigida, Pinus koraiensis, Taxus cuspidata from 6 sites in Youngjae go-gae, Wonju, Gangwon-do, Republic of Korea. We sterilized the collected leaves and isolated the endophytic fungi from them. After isolation, we identified isolted fungi by morphological and molecular analysis. As a result, we identified total 36 species of endophytes beloning to 25 genera. There was no sgnificant difference in richness but composition of endophytes community showed difference. Nemania was the most dominant in Abies koreana, Alternaria was in Juniperus rigida, and Annulohypoxylon was in Pinus koraiensis and Taxus cuspidata. Also, we tested the antimicrobial activity of endophytes using dual culture assay method. As a result, 3 species of endophytic fungi Paraphaeosphaeria sporulosa, Alternaria sp., Phoma cladoniicola showed antibacterial activity against 2 species of food poisoning bacteria Staphylococcus aureus, Listeria .monocytogenes. Also, 4 species of endophytic fungi Xylaria primorskensis, Lophodermium australe, Phoma medicaginis, Cordyceps sienesis showed antifungal activity against 4 plant pathogenic fungi Colletotrichum gloeosporioides, Glomerella cingulata, Fusarium sambucinum, Fusarum oxysporum which cause plant anthracnose, potato dry rot, fusarium wilt. Therefore, we found the potential availability of the endophytes as effective biological control of plant pathogens, and possibility of development of raw vegetables which naturally have resistance to food poisoning bacteria in this study.

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