

untreated control. Among the isolates, *Streptomyces* sp. IA12-2 was selected as promising biocontrol agent to control the clubroot of chinese cabbage. In addition to inhibition of *Plasmodiophora brassicae*, IA12-2 showed antifungal activities against seven pathogenic fungi, *Rhizoctonia solani*(sheath blight), *Pythium ultimum*, *Phytophthora capsici*, *Fusarium oxysporum*, *Sclerotinia sclerotiorum*, *Botrytis cinerea*, *Colletotrichum gloeosporioides*. Control value of cell suspension of IA12-2, supernatant of liquid culture and cells plus culture extract showed 53%, 81% and 100% respectively.

D-51 Antifungal activity of semipurified antifungal substance from culture filtrate of *Ulocladium atrum*. Eun Mi Kwon, Jin-Cheol Kim¹, and Seung Hun Yu. Department of Agricultural Biology, College of Agriculture and Life Sciences, Chungnam National University, Daejeon 305-764, Korea; ¹Korea Research Institute of Chemical Technology, Daejeon, 305-606, Korea

The antagonistic isolate, CNU 9054 isolated from tomato leaves was identified as *Ulocladium atrum* based on morphological characteristics and rDNA ITS sequence analysis. From the culture filtrate of CNU 9054, antifungal substance(UA-1) was isolated by ethyl acetate partitioning, silicagel column chromatography, and high performance liquid chromatography. UA-1 effectively controlled the development of rice blast (*Pyricularia grisea*), tomato gray mold (*Botrytis cinerea*) and barley powdery mildew (*Blumeria graminis* f. sp. *hordei*) in green house experiment. UA-1 showed strong inhibitory activity against mycelial growth of plant pathogenic fungi. It completely inhibited mycelial growth of *P. grisea* at concentrations of less than 33.3mg/L, *Alternaria alternata* at concentrations of less than 11.1mg/L, and *B. cinerea* at concentrations of less than 0.33mg/L. It also showed inhibitory activity against mycelial growth of *Colletotrichum gloeosporioides*, *C. acutatum* and *Fusarium oxysporum*. UA-1 was tested for its inhibitory activity of conidial germination of the fungus *B. cinerea*. It significantly decreased the germination rate of conidia of *B. cinerea*.

D-52 Biocontrol efficacy of lyophilized mycelium of *Ophiostoma quercus albino* strain against sapstain of wood caused by ophiostomatoid fungi. Byung-Ju Cho¹, Dong-Won Son², Dong-Heub Lee², and Jong Kyu Lee¹ ¹Tree Pathology and Mycology Laboratory, Division of Forest Resources, Kangwon National University, Chunchon, 200-701, ²Wood Preservation Laboratory, Division of Wood Product and Technology, Forest Research Institute, Seoul, 130-712, Korea