observed in aqueous layer, and to the isolation of fractions containing metabolites that retained most of the resistance-inducing activity (70:30, methanol:water) and the plant growth promotion (80:20 and 90:10, methanol:water) after ODS column chromatography. Although these molecules remain to be purified further and structurally characterized, its isolation is an addition to the range of determinants from plant growth-promoting rhizobacteria known to stimulate plant defence.

2-32. **Identification of an antagonistic bacteria and its antibiotic substance against** *Colletotrichum orbiculare* **causing anthracnose on cucumber**

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A bacterial strain YC4963 with antifungal activity against *Colletotrichum orbiculare*, a causal organism of cucumber anthracnose was isolated from the rhizosphere soil of Siegesbeckia pubescens (*Siegesbeckia pubescens* Makino; Family: Compositae) in Korea. Based on physiological and biochemical characteristics and 16S ribosomal DNA sequence analysis, the bacterial strain was identified as *Pseudomonas aureofaciens*. The bacteria also inhibited mycelial growth of several plant fungal pathogens such as *Botrytis cinerea, Fusarium oxysporum* and *Rhizoctonia solani* on PDA and 0.1 TSA media. The antibiotic activity was found from the culture filtrate of TSB(tryptic soy broth) and its active compounds were quantitatively bound to XAD adsorber resin. The antibiotic spectrum was broad and growth of *C. orbiculare* and *F. oxysporum, B. cinerea* were inhibited at very low concentration. The chemical data from various chromatographic procedures showed that active fraction consisted of at least two phenazine derivatives. However, the metabolites had no inhibitory effect on *Pythium ultimum* which was reported to be sensitive to phenazine antibiotics. The compounds responsible for the activity are now under investigation.

2-33. **Biological control of Lettuce Sclerotinia rot using** *Bacillus mojanvinensis* **Pro-EB 15 strain.**

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This studies were investigated the occurrence of Sclerotinia rot by *Sclerotinia Sclerotiorum* at the lettuce field in Uiryeong-Gun, Gyeongsangnam-Do and were isolated the most effective microorganism for the biological control to the pathogen, *S. sclerotiorum* YR-1 strain from diseased soil and lettuce leaves. For the pathogenicity test, the most suitable inoculmn density of YR-1 strain was selected as the mycelial suspension of 40ml showing disease incidence of 80%, and the symptom showed as same as at the fields, the leaves and stem had rotten and developed white downy mycelial at the diseased lesion on the leaves and stems, and produced black and irregular sclerotinia. On the PDA dual test, about 300 isolates were examined the antifungal activity to the pathogen, YR-1 strain, and among them, A-2, A-7, and RH-4 strain were selected most effective

antagonistic bacteria. At pots test, the control value of A-7 strain showed the highest value as 85% which was more effective than that of others in a growth chamber. For the promotion of control effect, the selected 3 isolates were spayed on the lettuce leaves as a sole and/or mixed treatments in a growth chamber, the mixed treatment of A-7 and RH-4 strain showing the control value of 90% was most effective than that of sole treatment with A-7 or RH-4 strain showing the control value of 80%, respectively and mixed treatment with A-2 and A-7 strain and A-2, A-7 and RH-4 strain. In addition, 3 bacteria re-isolated from diseased soils, and all of the selected 6 isolates investigated the control effect at pots in a growth chamber, According to the results, A-7 and Pro-EB 15 strain showed the control value of 91.0% and 90.1% respectively, and they were selected most effectual antagonistic bacteria to control lettuce sclerotinia rot and identified as the *Bacillus mojanvinensis* by 16s RNA analysis. This is the first report on the biological control using by *B. mojanvinensis* to the lettuce Sclerotinia rot.

2-34. **Control Effect of *Stenotrophomonas maltophilia* BW-13 strain to the lettuce Bottom rot**

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An antagonistic bacteria, *Stenotrophomonas maltophilia* BW-13 strain which was effectively inhibited mycerial growth of Bottom rot pathogen, *Rhizoctonia solani* PY-1 strain was isolated from the rhizosphere of the lettuce in Uiryeong-Gun, Gyeongsangnam-Do from 2002 to 2003. For the biological control, the most suitable inoculum and its density of pathogen, PY-1 strain ware tested prior biological control test, For the pathogenicity test, A inoculum (wheat bran+sawdust+rice bran+PDB) showing disease incidence of 100% was selected as the most suitable inoculum, which showed more effective than B inoculum (sawdust+rice bran+DW) and mycerial disc. also, In selection of the amount of inoculum (40g, 50g, 60g, 70g, 80g), most suitable amount of inoculum of pathogen determined as 40g showing disease incidence of 80%. For the selection of effective microorganism to control bottom rot on lettuce, about 200 isolates were isolated from the diseased soil and lettuce leaves, and examined their antifungal activity to the pathogen on PDA. As the pots assay, BW-13 strain showed the highest control value as 90%, and followed by R-13 and R-26 strain as 80% and 60%, respectively. Selected BW-13 isolates identified as *S. maltophilia* (GeneBank accession no. AJ293473.1, 99%) by 16S rRNA sequencing. This is the first report on the biological control using by *S. maltophilia* to the bottom rot pathogen, *Rhizoctonia solani* PY-1 strain.

2-35. **Screening rhizobacteria for biological control of root rot and Phytophthora blight on ginseng.**

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Ginseng (*Panax ginseng*) is one of the most widely cultivated medicinal herbs in Korea.