A025

A Taxonomic Study on South Korean Species of Canoparmelia (Parmeliaceae)

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The lichen genus Canoparmelia belongs to the family Parmeliaceae, where 55 species have been recorded in the world so far. Only three species, i.e. C. aptata (Krempelh.) Elix & Hale, C. owariensis (Asah.) Elix and texana (Tuck.) Elix & Hale, of this genus were included in the Korean Lichen checklist. Except for that, no taxonomic study on this genus has been carried out in South Korea. Therefore, the objective of the current study was to conduct a revisionary work on group Parmeliaceae and to provide detailed taxonomic information. The study was based on the specimens deposited in Korean Lichen Research Institute (KoLRI). The lichen samples were identified using stereo and light microscopy together with Thin Layer Chromatography (TLC), Voucher specimens were deposited in the herbarium of KoLRI, Sunchon National University, South Korea. The current study revealed three new records, i.e. Canoparmelia carneopruinata (Zahlbr.) Elix & Hale, Canoparmelia crozalsiana (de Lesd.) Elix & Hale and Canoparmelia ecaperata (Mūll. Arg.) Elix & Hale, for Korean lichen flora. In addition, a detailed taxonomic key is produced for the genus Canoparmelia, based on the available specimens and the literature:

Keywords: Canoparmelia, New records, Revised Key, South Korea, Taxonomy

A026

Plant Growth-promoting Effect in Pepper Plants by Endophytic Bacterium Martellela endophytica YC6887

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Endophytic bacteria have been known to control plants fungal diseases and promote host plant growth. In this study we used an endophytic bacterium Martellela endophytica YC6887, isolated from tidal flat plant growing in coastal area of Namhae island, Korea. The growth promoting effects of the bacterium on pepper plant were observed. The plant height and fresh weight treated with YC6887¹ were higher than control plant (without any treatment) tested under laboratory conditions. The field tests were conducted at Daekgok valley from April to September 2011. In the field test the plant height, main stem length, internode length and fruit yield were promoted in the plants treated with the strain YC6887¹ as compared with plants treated with chemical agents and control plants. The presence of endophytic bacterium YC6887¹ in the pepper plants stem was confirmed by drenching gfp mutants of the strain YC6887¹ to the pepper plants. The results indicated that YC6887¹ is an endophytic bacterium that can promote pepper plant growth under laboratory and field conditions. Keywords: Endophytic bacteria, Plant-growth promotion

A027

The Relationship Between Plant and Soil Bacterial Community in Tundra Soil, Alaska

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High latitude ecosystems are affected by warming faster than other temperate and tropical regions, and actually the climate of the Arctic has warmed significantly recent few decades. Plants have been focused on their responses can affect entire food webs, disturbance regimes, carbon and nutrient cycling, and water supply. Furthermore, soil microorganisms play a key role in nutrient cycling and other ecosystem process. In spite of the plant and soil microorganisms are good source to predict the climatic changes, their relationships are not understood well. Thus researches are needed to explain the relationship between vegetation and soil bacterial community in Arctic area. Here, we asked three questions: 1) which kind of plant is dominant, 2) and the dominant plant affect to the bacterial communities structures? and lastly 3) which environmental factors affect the plant and bacterial community structure? To answer these questions, we investigated the type of plant using quadrate (30 cm x 30 cm) with 25 m intervals and the soil bacterial community with the sampling sites using 16S rRNA gene sequencing. Also statistical analyses were carried out to identify the relationships between soil properties, plant and bacterial community.

Keywords: climate change, plant, microbial community, pyrosequencing, Aretic soil

A028

Chitinophaga polysacchareus sp. nov., an Exopolysaccharide-producing Bacterium Isolated from the Rhizoplane of the Dioscorea japonica

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We have been investigating the distribution of exopolysaccharideproducing bacterial species in the rhizosphere soil of domestic traditional medicinal herbs. A novel EPS-producing bacterium, MRP-151, was isolated from the rhizoplane of Dioscorea japonica collected at Geumsan and was characterized using a polyphasic approach. Cells of strain MRP-15^T was Gram-negative, yellow-pigmented, rod-shaped, aerobic, heterotrophic and non-motile. Strain MRP-15 grew optimally at 25 °C, pH 3-10 and degraded gelatin, cellulose and chitin. The phylogenetic pri 3-10 and degraded gerann, centulose and chitin. The phytogenetic analyses based on 16S rRNA gene sequences indicated that strain MRP-15^T belongs to the genus *Chitinophaga* in the family *Chitinophagaceae*. Most closely related species are *Chitinophaga ginsengisegetis* Gsoil 040^T (97.8 %), *Chitinophaga arvensicola* DSM 3695^T (97.7 %), *Chitinophaga niastensis* JS16-4^T (96.8 %) and *Chitinophaga terrae* KP01^T (96.4 %). DNADNA hybridization values of strain MRP-15^T with closely related Chitinophaga reference strains were 23 2-31 3%. The dominant menaguinone of strain MRP-15^T was were 23.2-31.3%. The dominant menaquinone of strain MRP-15^T was MK-7. The major fatty acids were C_{15:0} iso and C_{16:1} ω5c-OH. The polar lipids were phosphatidylethanolamine, unknown aminolipids and unknown lipids. The genomic DNA G+C content was 47.90.17 mol%. On the basis of phenotypic, chemotaxonomic and phylogenetic analysis, strain MRP-15^T represents a novel species of the genus Chitinophaga in the family Chitinophagaceae, for which the name Chitinophaga polysaechareus sp. nov. is proposed.

Keywords: Chitinophaga, Dioscorea japonica, exopolysaccharide