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### Identification and Characterization of the Extracellular Cysteine Protease from *Pseudomonas* sp. PS-1

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The present study was attempt to study a bacterium, which that produces and caseinolytic and fibrinolytic enzyme. A partial 16S rDNA sequence of the PS-1 was defined and comparared with available 16S rDNA sequence data base. PS-1 displayed significant homology with those of *Pseudomonas* sp.. The activity of crude extracellular protease produced by *Pseudomonas* sp. PS-1 was investigated. The enzyme had an optimal pH and temperature at 8.0-10.0 and 30-37 °C. Enzyme activity was inhibited by DTT , but not by EDTA, EGTA and PMSF, suggesting that the preparation contains a cysteine-protease. Cu<sup>2+</sup> ions did not inhibit the activity of this protease, whereas partially inhibited by Zn<sup>2+</sup>, Fe<sup>2+</sup>, Mg<sup>2+</sup> ions. To identify the fibrinolytic enzyme gene from the *Pseudomonas* sp. PS-1, two synthetic oligonucleotide primers, Pro0001\_F (5'-GCGTGAGAAGCAAAAATTGTGG-3'), and Pro1146\_R (5'-GCTTATTGTGCAGCTGCTT-3') were designed to complement the region to amplified based on the nucleotide sequence of Bacillus subtilis var. natto ORF. The resultant PCR product was purified and sequencing. By sequencing analysis, the results showed significance nucleotide sequences similarity to AF368283, known fibrinolytic enzyme.

**Key words:** Fibrinolytic enzyme, cysteine protease, activity

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### Comparison of Reproduction Systems of Genus *Potentilla*, *Potentilla discolor* in Korea and *P. conferta* in Mongol

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I investigated the reproduction system of nine natural populations of *P. discolor* in Korea and two Mongolian *P. conferta* populations. The measurements of 19 quantitative or qualitative morphological characters were taken on each of total individuals directly from their natural habitats. Multivariate principal component analyses (PCA) were conducted to detect differences among populations considering several characters simultaneously of variances using the statistical analysis system. 19 morphological characteristics between Korean *Potentilla* species and Mongolian *Potentilla* species showed a slight heterogeneity of variance. The length of internodes (LFL and LSI) and characteristics of root (LLR and NOR) were shown a significant difference between two species ( $P < 0.05$ ). The number of ramets in *P. conferta* decreased with increasing geographic distance from viviparity. However, *P. discolor* has most ramets at distance intervals 60~80 cm. In light conditions, *P. discolor* was significantly less resilience than *P. conferta*. In drought conditions, although there was not shown significant difference, *P. conferta* was less resilience than *P. discolor*. The core analysis indicates that *P. conferta* is the more resistant species than *P. discolor* and usually propagates by clonal growth during several strong environmental disadvantages such as drought events.