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Identification and Characterization of Imipenem-Resistant Clinical Isolates Producing Carbapenemase

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Imipenem-resistant bacteria were isolated from clinical specimens taken from hospitalized patients in Suncheon, Korea. Fifty-six isolates were phylogenetically analyzed based on 16S rRNA gene and *gyrB* gene sequence comparisons. Strains were affiliated with *Pseudomonas aeruginosa* (29 strains; 51.8%), *Acinetobacter baumannii* (22 39.3%), *Pseudomonas monteilii* (1), *Enterobacter hormaechei* (1), *Pseudomonas beteli* (1), *Enterobacter cloacae* (1) and *Pseudomonas geniculata* (1). Antibiotic resistance phenotype and MIC of the isolates was analyzed with the disc diffusion method and Vitek card. Resistance genotype was analyzed via PCR amplification of β-lactamase gene and repetitive sequence based PCR using ERIC primer. Six genotypes, in which two or more types in one strain, were found; genotype D (35 strains), E (29), B (19), A (17), C (11) and F (6).

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High-Throughput Screening for the Identification of Marine Microorganism Secreting Agarase and Cellulose

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High-throughput screening was performed for the identification of marine bacteria secreting agarase and cellulase. The highest agarase and cellulase activity was found in the culture supernatant of *Pseudoalteromonas* strain. The optimal pH and temperature of agarase and cellulase were determined by a reducing sugar assay, where the optimal pH of two enzymes was 8 and the optimal temperatures were 40 and 50°C, respectively. A thin layer chromatography (TLC) was used for the determination of agarose and cellulose hydrolysis reaction after incubating 200 μl of substrates (0.1% agarose and 0.2% carboxymethyl cellulose) and 25 μl of culture supernatants (2.29 mg/ml) at 40 and 50°C for 2hr. The presence of low molecular size of digested cellulose and agarose on the TLC plate indicated that *Pseudoalteromonas* strain secretes significant quantities of agarase and cellulase into extracellular environment. The assay has the advantage that agarase and cellulase activity can be directly measured using liquid cultures grown in a microtiter plate instead of separation or purification steps and is fast and easy to perform more adaptable for screening of a large number of samples.