

Isolation of cellulolytic and xylanolytic bacteria from horse manure and humus

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Twenty one microorganisms, expected to be cellulolytic or xylanolytic microorganisms were isolated from various environmental samples, such as soil, miscanthus residue, horse manure, compost, humus, etc. These strains were screened at 35°C by using plate count agar containing 1% (w/v) carboxymethyl cellulose (CMC) or xylan (from the beech wood) instead of glucose. All of them were rod form and gram positive strains. Among the strains, both D1 and E2 microbial strains, which have high cellulase and xylanase activities, were characterized and identified as *Bacillus subtilis* by analysis of 16S rDNA sequence and biochemical studies, and named as *B. subtilis* D1 and E2, respectively. The maximum cellulase activities of D1 and E2 were 38.5 and 30.9 IU, and optimum temperature for cellulase activity was 50°C. The maximum xylanase activities of D1 and E2 were 467.3 and 310.5 IU, and optimum temperature for xylanase activity was 60°C.