

## Study of effectiveness of cellulolytic bacteria from different sources in bio-activating of composting process

Hossein Saffari

Agricultural Research Education and Extension Organization (AREEO), Iran

Cellulolytic bacteria have a bio-activating role in the composting process. A study was carried out to isolate and identify cellulolytic bacteria from various sources. The isolates were cultured in the carboxymethyl cellulose (CMC) agar medium and incubated at 30°C for 3–7 days. Based on morphological characteristics of the isolates, maximum diameter of a clear zone around the colony and maximum cellulolytic activity, eight isolates were selected for further studies regarding composting experiments. Molecular tests based on PCR amplification and sequencing of 16S rRNA gene of isolates showed the closest phylogenetic similarity with the species of *Stenotrophomonas rhizophila* DSM14405 (99.8%), *Brevibacterium halotolerans* DSM8802 (99.6%), *Achromobacter marplatensis* B2 (99.8%), *Bacillus*

*methylotrophicus* CBMB205 (100%), *Pseudomonas azotoformans* IAM 1603 (99.7%), *Bacillus sonorensis* NBRC 101234 (99.8%), *Bacillus subtilis* KCTC 13429 (100%) and *Ochrobactrum thiophenivorans* DSM 7216 (99.3%). The study of the isolates impact on the composting of palm wastes in a randomized complete block design with 11 treatments in 3 replications showed that strain IB (*B. methylotrophicus*) caused a significant decrease in C:N ratio (58%). The increasing of microbial respiration compared with control after 30 days incubation at 37°C showed that the *B. methylotrophicus* strain IB with cellulolytic characteristics can be applied to hydrolysis of cellulosic biomass in the composting processes.

e: [hosaffary@yahoo.com](mailto:hosaffary@yahoo.com)