16S rRNA gene sequences analysis of Ficus elastica Rubber Latex degrading thermophilic Bacillus strain ASU7 isolated from Egypt

Hesham A, Nadia H, Mady I, Ahmed Shoriet A

Abstract:

Abstract A thermophilic Bacillus strain ASU7 was isolated from soil sample collected from Assiut governorate in Upper Egypt on latex rubber-containing medium at 45 °C. Genetically, the 16S bacterial ribosomal RNA gene of the strain ASU7 was amplified by the polymerase chain reaction (PCR) and sequenced. The sequence of the PCR product was compared with known 16S rRNA gene sequences in the GenBank database. Based on phylogenetic analyses, strain ASU7 was identified as Bacillus amyloliquefaciens. The strain was able to utilize Ficus elastica rubber latex as a sole source for carbon and energy. The ability for degradation was determined by measuring the increase in protein content of bacterium (mg/g dry wt), reduction in molecular weight (g/mol), and inherent viscosity (dl/g) of the latex. Moreover, the degradation was also confirmed by observing the growth of bacterium and formation of aldehyde or keto group using scanning electron microscopy (SEM) and shiff's reagent, respectively.

Keywords:

16S rRNA gene sequencing Phylogenetic analysis Natural rubber Biodegradation Parameters of degradation Thermophilic Bacillus

Published In:

Biodegradation, Volume 23, Issue 5, pp 717-724