

Selecting and characterizing bacterial consortia with the potential of fixing CO₂ and removing H₂S in a biogas atmosphere

Quiroz E, Madelaine

Biogas must be pretreated before its use; thus, both physical and chemical methods have been implemented to remove the fuel's principal pollutants (CO₂ and H₂S). Additional removal methods that use microorganisms' biological processes to eliminate pollutants have also emerged. A selection was made from six bacterial isolates to obtain consortia that removed CO₂ and eventually H₂S through the enrichment of cultures and the construction of clone libraries of gene 16S ribosomal DNA (rDNA). The results indicate that the principal differences between consortia were determined in the culture medium. C5 and C6 consortia had photosynthetic biomass 1.42 and 1.52 g/ml, respectively, and concentration of dissolved CO₂ 100.6 and 99.1 mg/l, respectively. The clone libraries showed that *Rhodospseudomonas* sp. had percentages 46.6, 42.5, and 86.8 % in C4, C5, and C6, respectively; *Xanthobacter* sp., 24.5 %, *Castellaniella* sp., 18 % in C5, and *Sphingobium* sp., 39.2 % in C4. © Springer International Publi