Studies on isolation, screening and molecular characterization of Polyhydroxybutyrate (PHB) producing soil bacterium *Lysinibacillus sphaericus*

Many bacteria are accumulated intracellular as reserve granules Polyhydroxybutyrate (PHB) in harsh environmental conditions. The present study deals with the isolation and characterization of Polyhydroxybutyrate (PHB) producing bacteria from the soil. Bacteria were isolated from soil samples like crop, nursery, and fodder fields. The bacteria were characterized. Six bacillus species were isolated and bacterium no. BBKGBS6 was identified as *Lysinibacillus sphaericus* BBKGBS6 (Accession number KP403811), and showed highest PHB producing bacteria. Optimization of physical and nutritional parameters for PHB production temperature, Agitation, media pH and inoculum concentration were 35 °C, 200 rpm, 7, 0.6 ml respectively. PHB production media, Glucose, Sapota fruit peel, Urea, Yeast extract and Urea: glucose were showed highest significant biomass. The PHB was purified. Characterization of PHB was carried out. Biopolymer (PHB) obtained from *Lysinibacillus sphaericus* BBKGBS6 can be efficiently developed into a film for medical applications.