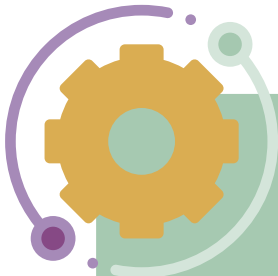




“New production process of polyhydroxybutirate (PHB) using *Azotobacter vinelandii*”

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Technology description

This invention is related to a new production process of the biopolymer polyhydroxybutirate (PHB) using the mutant strain under the name of OPNA, deposited in the Agricultural Research System (ARS) Patent Culture Collection (NRRL) of the Department of Agriculture of the USA. This OPNA strain produces and accumulates PHB at all stages of culture therefore there is no need of nutritional restrictions for promoting PHB production. The process is based on three stages: batch, exponentially fed batch and pulse feeding.

Applications, usage and benefits of the technology

The biopolymer polyhydroxybutirate (PHB) displays mechanical and biodegradability properties in relation to its molecular weight. This invention allows reaching high concentrations of PHB per litre of culture, as well as obtaining a high molecular weight product potentially useful in the manufacturing of high value products. Among other applications, PHB can be used as scaffolding in tissue engineering (manufacture of artificial organs, tissue repair) due to its high biocompatibility.



Technology readiness Level

Preliminary experiments reveal that this production process of PHB is easily scalable, since the productivity and concentrations reached in 20 L fermenters is similar to those presented at the laboratory scale. Such results can be explained by the low oxygen consumption of OPNA and the polymer production being associated completely with growth. Both characteristics would facilitate the management of operation production conditions.