

Effect of Nitrogen Sources and Incubation Times on Poly-beta-hydroxybutyrate (PHB) Synthesis by *Azotobacter Vinelandii* Isolated From Soils of Guilan Province (North Of Iran)

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Background & Objectives: Poly- β -hydroxybutyrate is a natural biodegradable polymer that accumulated as intracellular granules within the cell by a variety of bacterium. Polymers can be changed to forms of layers, fibers and sheets; in addition, polymer has specific functions in the medical industry as absorbable medical links. The purpose of this study was to optimization of ambient food ingredient and culture conditions to improve poly- β -hydroxybutyrate produced by isolation bacterium *Azotobacter vinelandii* from Deylaman's forests (North of Iran).

Methods: At first, using a factor of change methods in time, effect of different nitrogen sources, as well as incubation time of production was evaluated. Then, optimization in the best nitrogen source was performed. The effect of different nitrogen sources such as bactopecton, casein, yeast extract and ammonium sulphate was investigated in the production of poly- β -hydroxybutyrate by bacterium.

Results: Results showed that among carbon sources, sucrose was the best known as carbon source. The best time for PHB production by sucrose was obtained in 48 hours. In general, between concentrations of (1 - 8%) of carbon source, the concentration of 6% resulted in highest production.

Conclusion: Obtained results suggested that most appropriate nitrogen source concentration in production of PHB, was not necessarily the highest concentration, but also is the highest concentration that led to inhibition of bacterial growth.

Keywords: Nitrogen Sources; PHB; *Azotobacter*