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American Journal of Food Technology Title: Polyhydroxyalkanoates Production by Recombinant *Escherichia coli* Using Low Cost SubstrateAuthor: [Gustavo Graciano Fonseca](#) and [Regina Vasconcellos Antonio](#)

Source: American Journal of Food Technology 2 (1): 12-20, 2007

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**Abstract:** Polyhydroxyalkanoates (PHAs) are thermoplastic, biodegradable polyesters, synthesized by some bacteria from renewable carbon sources. However, its application is limited by the high cost of production. To reduce these costs, recombinant strains that use diverse carbon sources have been developed. In this study, it was studied PHAs production by recombinant *Escherichia coli* (DH10B and JM10), harboring the structural genes of the polyhydroxyalkanoate synthases of *Pseudomonas aeruginosa*, using hydrolyzed corn starch and soybean oil as substrate, cheese whey as supplement and acrylic acid as fatty acids  $\beta$ -oxidation inhibitor. Their effect on the cell mass and the PHA content had been evaluated through an experimental design  $2^4$ . The best results had been obtained with DH10B strain: Dry cell weight of  $1.02 \text{ g L}^{-1}$  and 23% of PHA (9 mol% 3-hydroxybutyrate, 4.5 mol% 3-hydroxyoctanoate, 30.7 mol% 3-hydroxydecanoate and 55.8 mol% 3-hydroxydodecanoate), in mineral media containing 5% of hydrolyzed corn starch, 5% of cheese whey and 5% of soybean oil, beyond 1 mM of acrylic acid.

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