

Molecular and functional analysis of the poly- β -hydroxybutyrate biosynthesis operon of *Pseudomonas* sp BJ-1

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ABSTRACT. The operon comprising the genes for poly- β -hydroxybutyrate (PHB) biosynthesis in *Pseudomonas* sp BJ-1 was cloned and sequenced. Sequence analysis of 8991 bp revealed that the regions contain two related operons. The first operon contains the three genes *phbA*, *phbB* and *phbC*, and the other contains the two genes *flp1* and *flp2*. The deduced amino acid sequences of PHBA and PHBB showed high identity with other bacterial PHB genes. Transcription of the three genes of the first operon is controlled by a single hypothetical promoter region, whereas the other two *flp* genes are controlled by two hypothetical promoter regions. Analysis of expressed protein at different times showed that PHBA protein levels increased from 0 to 4 h; PHBB and PHBC showed similar kinetics. Detection of enzyme activity showed three proteins with bioactivity and biological function in the synthesis of PHB intermediates.

Key words: Poly- β -hydroxybutyrate; Biosynthesis; Operon; *Pseudomonas* sp BJ-1