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Biosynthesis of poly-3-hydroxybutyrate from grass silage by a two-stage fermentation process based on an integrated biorefinery concept

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Abstract

Grass silage as a renewable feedstock for an integrated biorefinery includes nutrients and carbon sources directly available in the press juice (PJ) and lignocellulosic saccharides from the plant framework. Here, a novel two-stage fed-batch fermentation process for biosynthesis of poly-3-hydroxybutyrate (PHB) by *Cupriavidus necator* DSM 531 is presented. For bacterial growth, nutrient-rich PJ was employed as a fermentation medium, without any supplements. Saccharides derived from the mechano-enzymatic hydrolysis of the press cake (PC) were subjected to a lactic acid fermentation process, before the fermentation products were fed into the polymer

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