



Research Letter

Green biosynthesis of floxuridine by immobilized microorganisms

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Aeromonas salmonicida; pyrimidine nucleoside phosphorylase; entrapment immobilization; 5-halogenated 2'-deoxynucleosides; green chemistry

Abstract

This work describes an efficient, simple, and green bioprocess for obtaining 5-halogenated pyrimidine nucleosides from thymidine by transglycosylation using whole cells. Biosynthesis of 5-fluoro-2'-deoxyuridine (floxuridine) was achieved by free and immobilized *Aeromonas salmonicida* ATCC 27013 with an 80% and 65% conversion occurring in 1 h, respectively. The immobilized biocatalyst was stable for more than 4 months in storage conditions (4 °C) and could be reused at least 30 times without loss of its activity. This microorganism was able to biosynthesize 2.0 mg L⁻¹ min⁻¹ (60%) of 5-chloro-2'-deoxyuridine in 3 h. These halogenated pyrimidine 2'-deoxynucleosides are used as antitumoral agents.

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