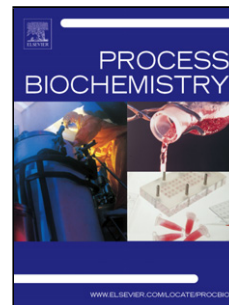


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1 **Thermostable amidase catalysed production of isonicotinic acid from isonicotinamide**

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9 **Abstract**

10 The biotransformation of isonicotinamide was investigated using thermophilic intracellular
11 amidase produced from *Geobacillus subterraneus* RL-2a. Various process parameters, including
12 amount of biocatalyst, substrate feeding rate, enzyme-to-substrate ratio and operational
13 thermostability were systematically examined with the aim of achieving complete substrate
14 conversion and high productivity. In 1 litre fed batch reaction containing 0.1 M isonicotinamide,
15 in 0.2 M potassium phosphate buffer (pH 6.5, 200 rpm) and 8 U ml⁻¹ amidase activity (12.48 mg
16 dcw ml⁻¹) of whole cells of *Geobacillus subterraneus* RL-2a (as biocatalyst) resulted in a yield of
17 0.1 M of isonicotinic acid after 50 min reaction time at 70 °C and a total of 61.55 g isonicotinic
18 acid was produced at a rate of 1.18 g h⁻¹g⁻¹dcw respectively. The volumetric productivity was
19 14.8 g h⁻¹l⁻¹.

20 **Keywords:** *Geobacillus subterraneus*; Thermostable; Amidase; Isonicotinamide; Isonicotinic
21 acid; Fed batch

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