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# An Integrated Chemo-enzymatic Route for Preparation of β-Thymidine, a Key Intermediate in the Preparation of Antiretrovirals

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ABSTRACT:

A chemo-enzymatic method for production of β-thymidine, an intermediate in the synthesis of antiretrovirals, is described. Guanosine and thymine were converted by means of enzymatic transglycosylation to yield 5-methyluridine (5-MU), which was reproducibly synthesised at a 10-20-L scale in 85% yield at a final product concentration of ∼80 g ·L-1. A downstream processing (DSP) protocol was designed to remove reaction components interfering with the subsequent synthetic step. The crystallised 5-MU produced in the biocatalytic reaction was found to behave similarly to commercially available 5-MU, and the integration of the initial biocatalytic and subsequent three-step chemical process to β-thymidine was successfully demonstrated at bench scale.