Enantioselective conversion of methyl-2-chlorobenzoylformate using *Saccharomyces cerevisiae* as whole cell biocatalyst

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Clopidogrel is a platelet aggregation inhibitor widely administered to atherosclerotic patients with the risk of a heart attack or stroke that are caused by the formation of a clot in the blood. Plavix (clopidogrel bisulfate) is marketed worldwide in nearly 110 countries, with sales of $6.4 billion per year. It had been the second top selling drug in the world for a few years and was still growing by over 20%. Methyl (R)-2-chloromandelate is key intermediate of clopidogrel and should be enantiopure.

Considering the enantioselective nature of enzyme, biological transformation of ketones into optically active alcohols could be an efficient strategy. In the present study, we investigate the factors that influence the reduction of methyl-2-chlorobenzoylformate to find optimum conditions enabling the efficient production of methyl (R)-2-chloromandelate.

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