

# Production of High Commercial Value Xylooligosaccharides from *Meranti* Wood Sawdust Using Immobilised Xylanase

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**Abstract** The present study explores the utilisation of a new raw material from lignocellulose biomass, *Meranti* wood sawdust (MWS) for high commercial value xylooligosaccharides (XOS) production using immobilised xylanase. The xylanase was immobilised by a combination of entrapment and covalent binding techniques. The hemicellulosic xylan from MWS was extracted using a standard chlorite delignification method. The production of total and derivatives of XOS from the degradation of the hemicellulosic xylan of MWS were compared to the production from the commercial xylan from Beechwood. The utilisation of the extracted xylan from MWS yielded 0.36 mg/mL of total XOS after 60 h of hydrolysis. During the hydrolysis reaction, the immobilised xylanase released a lower degree of polymerisation (DP) of XOS, mainly X2 and X3, which were the major products of xylan degradation by xylanase enzymes. The production of XOS with a lower DP from MWS demonstrated the biotechnological potential of the MWS in the future. The XOS production retained about 70% of its initial XOS production during the second cycle. This is also the first report on the utilisation of MWS wastes in enzymatic hydrolysis using immobilised xylanase for XOS production.

**Keywords** Xylooligosaccharides · *Meranti* wood sawdust · Lignocellulosic biomass · Immobilised xylanase

## Introduction

Currently, high commercial value xylooligosaccharides (XOS) are emerging due to their huge potential in many fields, which interestingly can be produced from lignocellulosic biomass wastes. The XOS has potential application in many fields including pharmaceutical, feed formulations, and agricultural purposes [1]. There are many excellent physiological properties

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