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Review

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Rajeev Ravindran, Amit Kumar Jaiswal

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## A Comprehensive Review on Pre-treatment Strategy for Lignocellulosic Food Industry Waste: Challenges and Opportunities

Rajeev Ravindran and Amit Kumar Jaiswal\*

*School of Food Science and Environmental Health, College of Sciences and Health, Dublin Institute of Technology, CathalBrugha Street, Dublin, Republic of Ireland.*

\*Corresponding author:

Email: [amit.jaiswal@dit.ie](mailto:amit.jaiswal@dit.ie); [akjaiswal@outlook.com](mailto:akjaiswal@outlook.com)

Tel: +353 1402 4547

### 1 Abstract

Lignocellulose is a generic term used to describe plant biomass. It is the most abundant renewable carbon resource in the world and is mainly composed of lignin, cellulose and hemicelluloses. Most of the food and food processing industry waste are lignocellulosic in nature with a global estimate of up to 1.3 billion tons/year. Lignocellulose, on hydrolysis, releases reducing sugars which is used for the production of bioethanol, biogas, organic acids, enzymes and biosorbents. However, structural conformation, high lignin content and crystalline cellulose hinder its use for value addition. Pre-treatment strategies facilitate the exposure of more cellulose and hemicelluloses for enzymatic hydrolysis. The present article confers about the structure of lignocellulose and how it influences enzymatic degradation emphasizing the need for pre-treatments along with a comprehensive analysis and categorization of the same. Finally, this article concludes with a detailed discussion on microbial/enzymatic inhibitors that arise post pre-treatment and strategies to eliminate them.

**Keywords:** Lignocellulose; food industry waste; pre-treatment; enzyme inhibitors; renewable resources

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