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Developing TASTE from the WASTE!

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Abstract

Amongst the major crops being produced in India, wheat (100 Million metric tons) and rice (112 MMT) are the two main food crops mowed by the farmers every year.This leads to the accumulation of huge agro-waste comprising of wheat and rice straw- a large portion of which is burnt in open fields as a regular practice. Apart from affecting the soil fertility, the practice of stubble burning is a major source of air pollution as it leads to emission of large amounts of suspended particulate matter along with gases like CH_4, CO, N_2O, NOX, SO_2 and hydrocarbons. In today's era of clean and green technologies, the hazardous wastes that pose a threat to the environment can be transformed into wealth via multiple routes.We propose that enzymes like lipases can play a role in these 'waste-to-wealth' routes of agro-waste utilization for the synthesis of natural food ingredients. The industry today needs sustainable technologies for lipase production and enzyme-mediated bio-transformations. Thus we aim to develop a novel efficient and cost-effective green process of lipase production by exploiting agro-waste as a substrate for fermentation and for subsequent synthesis of food flavor esters. During the course of this work, a bacterial library has been screened to obtain multiple isolates that effectively utilize agricultural waste as a substrate for enzyme synthesis, evidenced through high lipolytic titers (corresponding to nearly 2000 Units). The said microbes are able to thrive in high, industry-friendly temperature ranges and produce thermostable enzyme(s) for biotransformation of the agro-waste, thereby achieving an edge over their mesophilic counterparts.

Biography:

Tanya Bajaj is a Master's degree holder in the field of Microbial biotechnology and is pursuing her doctorate from the Department of Microbial Biotechnology, Panjab University, Chandigarh, India. She is also the Founder of a biotech startup, 'Kinac Innovations LLP' working with the aim of agro-waste utilization to serve various industries with multiple products in pipeline.

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