

# Solid State Fermentation of Plant Residues for Improved Animal Feed by *Pleurotus* sp.

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## ABSTRACT

In laboratory-scale experiments, studies were made on the solid state fermentation of plant residues—rice straw and the upper soft portion of the stems of sarkanda (*Saccharum munja*)—by selected cultures of white-rot fungi, *Pleurotus sajor-caju* and *Pleurotus ostreatus*. These cultures were selected after preliminary screening of their lignin-degrading capacities on lignin-agar medium. Their lignin degrading and (cellulose + hemicellulose) sparing, along with protein improving capacities, were studied for their potential application in animal feed production. A 100 g quantity of presoaked and sterilized residues was inoculated with wheat spawn of the two cultures and incubated at 25°C. It was observed that, after 25 d, the crude protein contents ( $N \times 6.25$ ) of rice straw increased from 3 to 17.0% in the case of *P. sajor-caju* and to 19.2% in case of *P. ostreatus*. The percent removal values of cellulose, hemicellulose, and lignin were found to be as follows: 45.8, 16.8, and 47.1%, respectively, in the case of *P. sajor-caju* and 56.5, 40.4, and 50%, respectively, in the case of *P. ostreatus*. After solid state fermentation of sarkanda for 25 d, its protein content increased from 3 to 12.8% in the case of *P. sajor-caju* and to 14.5% in the case of *P. ostreatus*. The percent removal of cellulose, hemicellulose, and lignin was found to be as follows: 31.2, 7.1, and 19%, respectively, in the case of *P. sajor-caju* and 34.4, 7.1, and 14.3%, respectively, in the case of *P. ostreatus*. The results obtained after solid state fermentation of the two residues by the mixed culture of these two basidiomycetes was also presented.