

## **Prospects and feasibility of fungal pretreatment of agricultural biomass for ruminant feeding**

### **ABSTRACT**

In recent years, the use of white-rot fungi as a pretreatment method to improve the nutritive value of agricultural biomass as ruminant feed, has received a substantial attention. However, there are several issues that need to be addressed for a successful application of this method. One of the issues is the inevitable variation in the nutritive values of the fungal-treated biomass. This paper reviews our recent works on validating the variation in the nutritive values of biomass treated with different fungal species. The general aims of these studies are: (1) to study the variability among different fungal species (and strains) in improving the nutritive value of the same batch of wheat straw; and (2) to assess the capabilities of selected fungi to improve different batches and types of wheat straw. A large variation of ruminal degradability – measured as *in vitro* gas production, IVGP), was observed, even for different strains of the same fungal species. The IVGP for different strains of *Ceriporiopsis subvermispota* ranged from 205.5 to 317.8 mL/g organic matter (OM), while the IVGP ranges for the strains of *Lentinula edodes* and *Pleurotus eryngii* were 183.5–306.6 ml/g OM) and 206.6–267.0 ml/g OM, respectively. A high potential fungus, strain CS1 of *C. subvermispota* consistently improved the IVGP of different batches and types of wheat straw by 27.7–47.6%. The variation in the nutritive value of fungal-treated biomass is evident. However, this issue can be overcome by using the right fungal strains with an optimal culture and growth conditions. More research needs to be done to make it an attractive substitute to physico-chemical methods. Here, we also put forward our manifestation on the future prospects of fungal pretreatment for ruminant feeding.

**Keyword:** White-rot fungi; Different species/strains; Variation; In vitro gas production; Wheat straw; Ruminant feed