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Evaluation of some fungal lignocellulolitic enzymes in biodegradation of rapeseed residues

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Rapeseed is one of the most important oil seed which has the second rank of production in the world after soybean. However its residues are not suitable for animal feeding because of its tannin and fiber contents. Lignocellulose makes a large part of plant residues. It is composed of cellulose (%30-65), hemicellulose (%10-27), lignin (%3-30) and protein (%3.6-7.2). Microorganisms by producing hydrolytic enzymes (exoglucanase and endoglucanase) degrade cellulose of lignocellulose and reduce fiber contents of plant residues. The objective of this study is to compare the ability of some saprophytic fungi in cellulose biodegradation of rapeseed residues. Fungi treatments (Tricoderma reesie, Tricoderma harzianum, Phanerochaet chrysosporium and Penicillium notatum) and a blank with 3 replicates were applied on rapeseed residues in a completely randomized design. Endoglucanase activity of Tricoderma reesie was higher (0.585 U) and that of Tricoderma harzianum was lower (0.04 U) than that of the other fungi. Statistical analysis showed that there were significant differences ($P<0.05$) between endoglucanase activity of Tricoderma reesie and other fungi. Exoglucanase activity of Phanerochaet chrysosporium was higher and that of Penicillium notatum was lower than that of the other fungi. However statistical analysis showed that there were no significant differences ($P<0.05$) among exoglucanase activities of fungi. In this study evaluation of cellulolitic enzymes showed that the ability of *Tricoderma reesie* and *Phanerochaet chrysosporium* in rapeseed residues biodegradation and compost production were relatively high.

Keywords: Rapeseed, Endoglucanase, Exoglucanase, Fungi

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