

عنوان مقاله:

Biological fungal treatment of olive cake for better utilization in ruminants nutrition in Egypt

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نویسندگان:

Mohamed Fadel - *Department of Microbial Chemistry, Genetic Engineering and Biotechnology Division, National Research Centre, 33 El-Bohouth St., Dokki, Giza 12622, Egypt*

Dina Helmy El-Ghonemy - *Department of Microbial Chemistry, Genetic Engineering and Biotechnology Division, National Research Centre, 33 El-Bohouth St., Dokki, Giza 12622, Egypt*

خلاصه مقاله:

Background Crop residues and agro-industrial by-products, available in appreciable quantities, can play a significant role in the nutrition of ruminants. The appropriate utilization of by-products in animal nutrition can improve the economy and the efficiency of agricultural, industrial and animal production. The present work investigates the bio-conversion of olive cake (OC), generated by the olive oil industries in Egypt, using locally isolated filamentous fungi in solid state fermentation, so as to upgrade its nutritional values and digestibility for its use as ruminant feed. Methods Seven non-mycotoxin producing fungal strains namely *Trichoderma reesei* F-418, *T. harzianum* F-416, *T. viridie* F-520, *T. koningii* F-322, *Aspergillus oryzae* FK-923, *A. fumigatus* F-993, and *A. awamori* F-524 were cultured on OC for 7 days at 36 °C. Subsequently, the chemical composition and lignocellulolytic enzyme activities of the resultant substrate were determined. Results The most promising result was obtained by *A. oryzae* FK-923, whereas, an increase in crude protein content ranging from 9.5 % (untreated) to 17.4 % (treated) was detected, while phenols were decreased from 3.1 to 0.92 % and fibers declined from 33 to 22.2 %. A reduction in the values of neutral detergent fiber (NDF) and acid detergent fiber (ADF) were reported. The addition of sugarcane molasses at 2 % showed an increase in crude protein to 18.9 % with a reduction in phenols and fibers to 0.69 and 21.8 %, respectively. Furthermore, the addition of active dry yeast (*Saccharomyces cerevisiae*) at 1.5 % to the fermentation medium raised the crude protein to 20.2 % (w/w), while phenols and fibers were declined to 0.55 and 19.2 %, respectively. Conclusions Therefore, the present findings revealed *A. oryzae* FK-923 to be an efficient organism for lignocellulolytic enzymes production and simultaneous enhancement in crude protein and in vitro digestibility of OC.

کلمات کلیدی:

Olive cake Biological treatment Solid state fermentation Ruminants feed

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