

## Research Abstract

### Bioconversion of Agro-Waste Using Phytase Producing Endophytic Fungi and Evaluation of Its Feasibility as a Feed Supplement in Poultry Diet

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**Citation:** Patil RH, Bhadane BS, Patil MP, Maheshwari VL (2017) Bioconversion of Agro-Waste Using Phytase Producing Endophytic Fungi and Evaluation of Its Feasibility as a Feed Supplement in Poultry Diet. Food Nutr J 2: 123. DOI: 10.29011/2575-7091.100023

**Received Date:** 26 February, 2017; **Accepted Date:** 08 March, 2017; **Published Date:** 14 March, 2017

#### Abstract

Exploring alternative feed ingredients is the major focus of research on poultry diet all over the world. Agro-wastes could provide the basis for cost-effective poultry feed because of negligible cost and abundant availability. The study evaluates solid-state bioconversion three different agro-residues- ground shells, pigeon pea husk and wheat straw using endophytic fungi with a view to increasing the nutritive value and its feasibility as poultry feed. The phytase producing endophytic fungi *Colletotrichum gloeosporioides*, isolated from *Celastrus paniculatus*, showed excellent bioconversion of selected agro-residues in Solid State Fermentation (SSF). After completion of bioprocess, it was observed that *C. gloeosporioides* significantly altered the nutritional values of all tested wastes. Cellulose, hemicellulose, and lignin content were significantly reduced in the biotransformed waste as compared to untreated residues. On the other hand, total carbohydrates were significantly increased in all treated waste with groundnut being the best with maximum carbohydrates (12.32±0.8 g/100g). Total crude protein and total nitrogen content of the treated waste was significantly improved. Crude protein and nitrogen content were found highest i.e. 22.85±1.4 and 14.23±0.9, respectively in the biotransformed ground nut shells using *C. gloeosporioides*. The tannins and phytate content was found to be significantly lowered in the processed waste. Dietary inclusion of bio-transformed residues in poultry trials revealed that the bioprocessed agro-wastes of ground shells may be added up to 20%; whereas the pigeon pea waste may be added up to 10% to the commercially used poultry diet without any adverse effect. It can be concluded that the biotransformed agro-residues of ground nut shells can be used as a partial substitute of conventional poultry diets as these are rich phytase, other nutrients and are having good digestibility.

**Keywords:** Agro-Wastes; Endophytic Fungi; Crude Protein; Bioconversion; Phytase; Bio-Transformed Agro-Residues