

Comparison of the effects of the fungus *Trichoderma viride* and *Trichoderma harzianum* on the biochemical pigeons birds

Mohammed Naithel Radhi

University Of Thi-Qar, College Of Agriculture and Marshes, Plat Protection Department, Thi-Qar, Iraq

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ABSTRACT: The objective of this research is to evaluate the effect of feed of poultry on wheat processed with *Trichoderma viride* and *Trichoderma harzianum*. The results show that significant [$p \leq 0.05$] increase serum AST in first treated group only compared with control group, but second groups shows non significant increase, significant [$p \leq 0.05$] increase in ALT serum in two studied group compared with control group also there is significance [$p \leq 0.05$] change found in bilirubin and total protein of serum in all group only when compared with control. The cholesterol, Triglyceride and LDL shows significant [$p \leq 0.05$] increase in all treated groups when compared with control. HDL and VLDL appears significant [$p \leq 0.05$] increased in the first treated group only the second group shows no significance [$p \leq 0.05$] compared with control.

KEYWORDS: *T. harzianum*, *T. viride*, pigeon, AST, ALT, Billirubin, Total protein, cholesterol, Triglyceride, HDL, LDL, VLDL.

1 INTRODUCTION

Trichoderma spp. are fungi that are present in nearly all agricultural soils and in other environments such as decaying wood. The antifungal abilities of these beneficial microbes have been known since the 1930s, and there have been extensive efforts to use them for plant disease control since then. These fungi grow tropically towards hyphae of other fungi, coil about them in a lectin-mediated reaction, and degrade cell walls of the target fungi by the secretion of different lytic enzymes. This process [mycoparasitism] limits growth and activity of plant pathogenic fungi [Ilan et al., 2006].

Trichoderma species are ubiquitous saprophytic fungi commonly found in soil worldwide. Classically, nine species aggregates have been described as members of this genus [Rifai, 1969], with four different species of *Trichoderma* identified as causes of human disease. Although only rarely pathogenic in humans, *Trichoderma spp.* have been reported to cause a pulmonary mycetoma [Escudero et al., 1976], peritonitis [Loeppky et al., 1983] [Ragnaud et al., 1984,] [Tanis et al., 1995], infection of a perihepatic hematoma [Jacobs et al., 1992], a brain abscess [Seguin et al., 1995], and disseminated disease [Gautheret et al., 1995].

Trichoderma viride is the most common of the *Trichoderma* species, which are saprophytic filamentous fungi found around the world. They are widely used in industry to obtain mold-derived enzymes and in agriculture they serve as biofungicides.

Only a few cases of infection due to *Trichoderma* species and *T. viride* in particular have been reported [Chouaki et al., 2002]. *T. viride* has been found in high concentrations in dust collected in the bedrooms of children with asthma living in waterdamaged homes [Vesper et al., 2006].

Alicia et al., 2009 said that 45 years old woman suffer from Hypersensitivity pneumonitis caused by *Trichoderma viride* had not been exposed to any obvious source of organic dust, except pigeons nesting on balconies near her house [Alicia et al., 2009]. *Trichoderma spp.* Are recognized as human pathogens with increasing frequency, particularly for immunocompromised patients, and should be considered in the differential diagnosis of fungal infections in the pediatric population [FLOR et al., 1997].

Six species of the genus *Trichoderma* [*T. harzianum*, *T. koningii*, *T. longibrachiatum*, *T. pseudokoningii*, *T. citrinoviride*, and *T. viride*] that have been identified as etiologic agents of infection in immunocompromised hosts [Christina et al., 2006].

2 MATERIAL AND METHODS

Nine pigeons used in this experiment in which divided into three groups [three in each group] one of them control [Group 1] and the other two groups as treatment groups, All groups feed on wheat for 30 days.

The wheat of treated groups processed with *Trichoderma harzianum* [Group 2] and *Trichoderma viride* [Group 3] but the wheat of control group is clear.

T. harzianum and *T. viride* added to wheat in ratio 1 ml of spores suspension to 5 ml of water and added to 1 kilo of wheat, each pigeon eat 70 grams of food during the period of experiment.

The blood collected before and after experiment with anticoagulant tube, the blood centrifuged to obtain plasma to measure the AST, ALT, Total protein, Billirubin, Cholesterol, Triglyceride, and High Density Lipoprotein [HDL].

LDL and VLDL calculated by Iranian index.

BIOLABO kit [made in france] is used to measured the studied parameters.

3 RESULTS

Table 1. show effect of wheat processed with *T. viride* and *T. harzianum* on AST, ALT, Billirubin and Total protein [n=3]

	AST IU/L	ALT IU/L	Total protein g/dl	Billirubin mg/dl
Group[1]	209.1b	100.1b	8.8c	10.9c
Group[2]	245.3a	146.6a	21.3a	23.0a
Group [3]	230.8ab	126.4a	15.0b	16.7b
LSD	28.1	20.8	4.4	3.7

The different letters refer to significant differences between groups at level of [p<0.05].
n=Number of specimens

Table [1] shows the effect of feeding of wheat processed with *T. viride* and *T. harzianum* on some biochemical parameters [AST, ALT, Billirubin and Total protein] in pigeon serum. The results shows significant [p<0.05] increase of AST, Total protein and Billirubin in Group 2 but there is no significant [p<0.05] change in the Group 3.

ALT shows significant [p<0.05] increase in the Group 2 and 3 compared with control.

Table 2. show effect of wheat processed with *T. viride* and *T. harzianum* on Cholesterol, Triglyceride, HDL, LDL and VLDL [n=3]

	Cholesterol mg/dl	Triglyceride mg/dl	HDL mg/dl	LDL mg/dl	VLDL mg/dl
Group[1]	628.0c	95.6c	132.0b	476.8c	19.1b
Group[2]	992.9a	141.0a	162.3a	800.2a	30.3a
Group[3]	849.5b	120.3b	148.3b	677.1b	24.0b
LSD	130.8	15.8	18.2	107.1	5.3

The different letters refer to significant differences between groups at level of [p<0.05].
n=Number of specimens

Table [2] show effect of feed of wheat processed with *T. viride* and *T. harzianum* on Cholesterol, Triglyceride, HDL, LDL and VLDL in which there is significant [p<0.05] increase in all treated groups with concerned with cholesterol, Triglyceride, and LDL concentration when copared with control group.

HDL and VLDL concentrations appears significant [p<0.05] increase in group 2 comparing with control but no significant [p<0.05] increase showed in group 3 according to control group

4 DISCUSSION

There are significant increase in the concentration of AST and ALT in treated groups when compared with the control group and this is due to ALT and AST are present in high concentrations in the cytoplasm of the liver, kidney, and myocardial and skeletal muscle and occur in other organs at lower activities. There is also a mitochondrial form of AST. The biochemical function of aminotransferases is to transfer an amino group from an α -amino acid to an α -ketoacid with pyridoxal phosphate [vitamin B6] as a cofactor. This reaction is an important step in intermediary metabolism. Non liver causes for increases in AST include damage to cardiac or skeletal muscle cells and hemolysis[Smita et al.,2009].

Plasma total protein represents a complex mixture of proteins of different structural and functional properties. The major plasma proteins include albumins, globulins, fibrinogen, nucleoproteins and conjugated proteins, such as lipoproteins and seromucoid proteins [Gentry, 2005]. In birds, the bulk of plasma proteins consist of albumin which constitute about 40-60% of the total protein [Campbell and Coles, 1986]. Alteration of plasma protein contents in disease can ultimately affect its nutritive, physicochemical or transportive functions [Gentry, 2005] and this explanation agree with increase of total protein of serum of treated pigeon by effect of fungal treated of wheat.

Lipid profile increased and this is may be due to the type of diet in which the wheat has high level of lipids so there is significant increase in all lipid parameters Steven and Richard, 1988 said that Animals were fasted overnight prior to obtaining blood for lipoprotein isolation. Pigeon P-VLDL and hypercholesterolemic LDL were obtained from pigeons that were fed a cholesterol-containing diet for at least 3 months. Pigeon normolipemic LDL and high density lipoprotein [HDL] were obtained from pigeons consuming a cholesterol-free pelleted grain diet.

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