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EFFECT OF ADDING OF THE MILK THISTLE (*SILYBUM MARIANUM*) SEED POWDER IN THE TRAITS OF BIOCHEMICAL BLOOD OF THE QUAIL

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Abstract

The aim of this study was to evaluate effect of adding different levels of the Milk Thistle (MT). *Silybum marianum* seed powder in the traits of biochemical blood of the quail. A total 72 quail at 60 week old were used and randomly distributed into three Treatments with six replicates (cages) per treatment each containing three female and one male. The treatments were the following: Treatment1: the control (without MT seed powder). Treatment2: Supplementation 0.5 % of milk thistle seed powder Treatment 3: Supplementation 1 % of milk seed powder. Results obtained are as follows: There was no significant differences at P <0.05 in Glucose and albumin. Significant increase in value of total protein and globulin at P <0.05 compared with control treatment. Significant decrease in Cholesterol, GSH, MAD, AST and ALT in comparison with control treatment.

Key words : *Silybum marianum*, biochemical bllod, milk thistle seed powder.

Introduction

In the poultry industry, specialist feed ingredients are added to enhance growth performance and improve feed conversion ratio (Babazadeh *et al*., 2011; Waseem Mirza *et al.,* 2016). Since the 1990s, due to the ban on antibiotic use throughout the world, researchers have been studying on phytogenic growth promoters to attain better performance in animals. Milk thistle (*Silybum marianum*) is a native herb that belongs to the family *Carduus marianum*. This plant has reddish-purple flowers with large leaves which are usually thorny. THE fruits and seeds of this herb have been investigated for various medicinal uses (Dermarderosin, 2001), the first being for its antioxidant and hepatoprotectant activities (Federico *et al.,* 2017). Since ancient times, this plant has been used as a potent medicinal tool in the treatment of diseases such as gallbladder and liver disorders and shows promising effects in protecting the liver against snake bite, as a growth promotant, immunostimulant, for symptoms of alcohol abuse, to treat insect stings and treat mushroom poisoning (Chand *et al.,* 2011). It is known as a natural treatment for icterus and metabolic disorders affecting the liver (Federico *et al.,* 2017). The most active component of milk thistle is silymarin that is derived from seeds and is the main active compound for hepatoprotection (Polyak *et al.,* 2013; Aller *et al.,* 2015). Compounds comprise silybins A and B (known as silibinins A and B), followed by isosilybins A and B. Three other flavonolignans such as isosilychristin, silychristin, and silydianin have been isolated, in addition to the flavonoid taxifolin (Pferschy-Wenzig *et al.,* 2014). The hepatoprotective activities of Milk thistle, such as immunomodulating, inhibiting free radicals, and restoring the function of antioxidative enzymes e.g. glutathione concentrations, decreasing oxidative stress, antifibrotic, anti-inflammatory effects and generating cell membrane stabilisation have been reported (Karimi *et al.,* 2011 Salomone *et al.,* 2016). Using silymarin in the treatment of disorders of CNS, lungs, prostate, pancreas, kidneys, gallbladder, and skin have been indicated (Karimi *et al.,* 2011; Kazazis *et al.,* 2014). In a feeding study, milk thistle supplemented in broiler diets significantly increased the activities of hepatic enzymes such as ALT and AST (Dumari *et al.,* 2014). In diabetic rats, Milk thistle significantly reduced plasma levels of triglycerides,

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cholesterol, ALT and AST (Tuorkey *et al.,* 2015). Milk thistle is thought to act mainly through its anti-inflammatory and antioxidant properties and stimulates liver cell regeneration (Vargas-Mendoza *et al.,* 2014).

Materials and Methods

The experiment was conducted in the field of poultry of the Department of Animal Production _ College of Agriculture _ University of Tikrit for a period of 63 days, for the purpose of studying the effect of using different levels of milk thistle (MT) seed powder (0, 0.5 and 1 g / kg diet) on the biochemical characteristics of a bird. Quail The experiment was started at the age of 60 days after one week of bringing the birds for the purpose of localization to the new place.

Table 1: Ingredients and nutrient composition of the experimental diets and nutrient composition of experimental diets.

Ingredients	**%**
Corn	38.7
Wheat	17
Soybean meal (48% CP)	32
Protein Center	2.5
Sunflower oil	2.5
Dicalcium phosphate	7
Salt	0.3
Total	100
The calculated chemical analysis **	
ME, kcal/kg	2781
CP %	21.60
Lys %	1.08
MET %	0.36
Met+ Cys %	0.67
Ca %	1.96
P %	1.50
CF %	3.66

* ALEWIFE protein center One kilogram Containing: 2100 Kcal of energy 40% c. p, 5% fat, 2% fiber, 25% ash, 8% ca, 2 p, 2.85% lys, 2.85% met, 1.8% meth + c-ysteine, 3.22%

** The chemical composition according to the analysis of feed materials in NRC (1994).

A total 72 quail at 60 week old were used and randomly distributed into ýthree Treatments with six replicates(cages) per treatment each containing three female and one male. The treatments were the following: Treatment 1: the control (without milk thistle seed powder). Treatment 2 : Supplementation 0.5 % of milk thistle seed powder Treatment 3 : Supplementation 1 % of milk seed powder. Quails were kept in special laying cages 40×40×40 cm. and in a room with A lighting program including daylight of 16 hours and dark program of 8 h was applied during the laying period. Water and food were provided to birds freely (*Ad libitum*) throughout the experiment. Birds fed on a productive diet, (Table 1). The traits data of biochemical blood were recorded in 16 wk old. The data were analyzed by complete random design (CRD) to study the effect of coefficients on the studied traits. Significant differences were compared by test (Duncan, 1955) at probability level ($P \leq 0.05$), and statistical program (SAS, 2009).

Results and Discussion

The traits of biochemical blood were showed in 16 wk. old:

(Table 2) shows the effect of adding different levels of milk thistle powder (0, 0.5, 1 g / kg feed) to the diet in the biochemical blood characteristics. We find no significant differences For glucose and albumin with in all treatments. As for the level of cholesterol, we find significant decreasing cholesterol concentration in two treatments adding milk thistle powder compared with the control treatment.

There was a significant increase in the total protein and globulin levels for the second and third treatments (addition of 0.5 and 1 g kg respectively) compared with the first treatment (control).

(Table 3) shows the effect of adding different levels of milk thistle seed powder (0, 0.5, 1 g / kg feed) to the diet in the case of Malondialdehyde (MAD), Glutathione (GSH) Alanine Amino Transferase (ALT) and Aspartate Amino Transferase (AST).

There was a significant increase in GSH for the control treatment compared to the third treatment, while the second treatment did not record any significant differences with the first and third treatments. In the second and third treatment birds compared with control. While the enzyme (AST) we find a significant decrease in the level of the enzyme for the second and third treatments compared with the control treatment.

Table 2: Effect of milk thistle seed powder on blood biochemical parameters of quail.

Treatment	**Traits**				
	Glucose (g/100ml)	**Cholesterol (g/100ml)**	**Total Protein (g/100ml)**	**Albumen (g/100ml)**	**Globulin (g/100ml)**
T_1 Control	293a	243.75 a	4.21b	1.64 a	2,57 b
T_2 0.5g MT	320a	186.25 ab	6.4 a	1.67 a	4.73 a
T_3 1g MT	305 a	142.75 b	6.1 a	1.87 a	4.23 a

Figures bearing different superscripts within a row differs significantly ($P<0.05$).

Table 3: Effect of milk thistle seed powder on antioxidant enzymes ,GSH and MDA of quail.

Treatments	Traits			
	GSH	MDA (nmol/L)	ALT	AST
T_1 Control	1.74 a	1,90 a	8.55 a	86.45 a
T_2 0.5g MT	1.39 ab	1.78 a	6.37 b	67. 73 b
T_3 1g MT	1.06 b	1.04 b	5.54 c	60.68 b

The studies using different hepatotoxic substances showed that silymarin has multiple actions as a hepatoprotective agent. The antioxidant property and cell-regenerating functions as a result of increased protein synthesis are considered as most important (Køen and Walterová 2005; Kosina *et al.*, 2002)

Silymarin can enter into the nucleus and act on RNA polymerase I enzymes and the transcription of rRNA, resulting in increased ribosomal formation. This in turn hastens protein and DNA synthesis (Sonnenbichler and Zetl, 1986) which enhances the biosynthetic apparatus in the cytoplasm, thus leading to an increase in the synthesis rate of both structural and functional proteins. At least conceptually, this stimulation may enable cells to counteract the loss of transporters and enzymes occurring under many pathological conditions. This action has important therapeutic implications in the repair of damaged hepatocytes and restoration of normal functions of liver.

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