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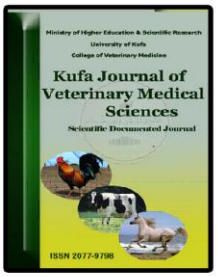
vetmed@uoKufa.edu. iq



Effect of *Taraxacum officinale* and *Saccharomyces cerevisiae* or their Mixture on some Productive Parameters of Turkey

Ali Mahdi Sahib

Department of Public Health, College of Veterinary Medicine, University of Kufa, Iraq
E-Mail: ali.mahdi2010@yahoo.com

Abstract

Reaching to the highest body weight in return for each unit of feed consumption is the aim of raising commercial poultries these days. This study was undertaken to investigate the effects of incorporating *Taraxacum officinale*, *Saccharomyces cerevisiae* and their combination powder as a growth promoter in turkey feed. A total of 40 turkey toms (black strain) at age 49 days old were randomly assigned to four equally treated groups (10 birds per treatment) with two replicates (5 birds per replicate),as following: The first group (T1) was fed on basal diet as a control group (without additive). While, second group (T2) and third group (T3) were daily fed on basal diet containing 0.25 % *Taraxacum officinale* and *Saccharomyces cerevisiae* respectively. On the other hands, four group (T4) was daily fed on basal diet containing 0.5 % mixture of *Taraxacum officinale* and *Saccharomyces cerevisiae* during period of experiment (28 days). Body weight, weight gain, feed intake and feed conversion ratio were calculated on weekly basis. Generally, The results indicate that no significant improvement in measurements of productive performance. In conclusion, meat production in turkey had no effect by *Taraxacum officinale* (as prebiotic), *Saccharomyces cerevisiae* (as probiotic) and their combination powder (as symbiotic).

Keywords: Turkey, Growth performance, *Taraxacum officinale*, *Saccharomyces cerevisiae*

تأثير مسحوق نبات الهندباء و خميرة الخبز أو خليطهما على بعض المعاير الإنتاجية لطيور الرومي

علي مهدي صاحب

فرع الصحة العامة, كلية الطب البيطري, جامعة الكوفة, العراق

الخلاصة:

بما إن الوصول إلى وزن جسم أعلى بالنسبة للعلف المستهلك هو هدف تجاري لكل مربي هذا اليوم. لذا أجريت هذه الدراسة على طيور الرومي لمعرفة تأثير إضافة مسحوق نبات الهندباء (كسابق حيوي) و خميرة الخبز (كمعزز حيوي) أو خليطهما التآزري إلى العليقة كمحفز للنمو. استخدم 40 طير ذكر حيث قسمت عشوائيا بعمر 49 يوم إلى أربعة معاملات متساوية (كل معاملة تحوي 10 طير) بحيث تشمل كل معاملة مكررين (كل مكرر يحوي 5 طير), وكما يلي:المعاملة الأولى/غذيت عليقة أساسية واعتبرت مجموعة سيطرة (بدون أي اظافة). بينما المعاملة الثانية و الثالثة/غذيت بصورة متتالية على عليقة أساسية تجهز يوميا بمسحوق نبات الهندباء و خميرة الخبز بنسبة 0.25 % على التوالي. أما المعاملة الرابعة/غذيت على عليقة أساسية تجهز يوميا بخليط تآزري من نبات الهندباء و خميرة الخبز بنسبة 0.5 % خلال فترة التجربة (28 يوم). تضمن البحث قياس وزن الجسم, الزيادة الوزنيه, استهلاك العلف و كفاءة التحويل الغذائي أسبوعيا. بصورة عامة بينت النتائج عدم حصول زيادة معنوية في مقاييس الأداء الإنتاجي. لذا يستنتج أن إنتاج اللحم في الرومي لا يتأثر بمسحوق نبات الهندباء (كسابق حيوي) و خميرة الخبز (كمعزز حيوي) أو خليطهما التآزري.

الكلمات الافتتاحية: طيور الرومي, أداء النمو, نبات الهندباء, خميرة الخبز

Introduction

Turkey (*Meleagris gallopavo*) is a very important bird usually raised for economic benefit [1,2]. All types of antibiotics have been used extensively as growth promoters in livestock feeds for many years [3,4,5]. Modern medical studies for the World Health Organization (WHO) and the Agency for Food and Drug Administration (FDA) pointed antibiotics could lead to the development of antibiotic resistant bacteria which are harmful to humans. Alternative substances and strategies for animal growth promotion and disease prevention are being investigated, among which herbs or products have received increased attention since they have acquired more acceptability among consumers as natural additives [6,7,8]. The intestine harbours a complex and dynamic microbial ecosystem that has several major functions [9]. The first or the most important function is represented by ability of this ecosystem to protect the host from intestinal disorders [10]. Hutkins *et al*. [11] defined a prebiotic as a non digestible food ingredient which beneficially affects the host by selectively stimulating the growth of and/or activating the metabolism of one or a limited number of health promoting bacteria in the intestine, thus improving the host's microbial balance. In animal nutrition, probiotic is defined as viable micro-organisms used as feed additive, which lead to beneficial effects for the host by improving its microbial balance or the properties of the indigenous microflora [10,12]. For this reason, the addition of prebiotic and probiotic to a diet for poultry (considered as factors potentially beneficial to the health status and performance resulting from their consumption) has been growing in recent years [13,14]. Prebiotic and probiotic are two of the different approaches that have the potential to reduce enteric disease in poultry and subsequent contamination of poultry products [15]. They can alter the intestinal microbes and immune system to reduce colonization by pathogens in certain conditions [15,16]. Patterson and Burkholder, Zhang *et al*., Luquetti *et al*. [16,17,18] found Prebiotic and probiotic potential to enhance growth rate, feed efficiency, and livability in poultry species. *Taraxacum officinaleis* herbal plant used as prebiotic because it is containing different active ingredients like inulin, essential oil and aromatic compound [19,20]. While, Saccharomyces *cerevisiae* is considered as probiotic [10,21]. In Iraq there was a few range of studies and researches on turkey production. Thus, aim of the current study was to determine the effects of supplementing *Taraxacum officinaleis*, *Saccharomyces cerevisiae* and their mixture in rations on the performance parameters.

Materials and Methods

In poultry sector *Taraxacum officinale* and *Saccharomyces cerevisiae* were used at the level 0.25 % [8,13,18]. This experiment was carried out at poultry farm, College of Veterinary Medicine/ University of Kufa during the period from 13, April to 11, May 2014. Forty turkey toms (black strain) at age 49 days old were divided randomly and equally into four treated groups of 10 birds, each treated group was subdivided into two replicates of 5 birds per replicate. The first group (T1) was fed on basal diet as a control group (no additive). While, second group (T2) and third group (T3) were daily fed on basal diet containing 0.25 % *Taraxacum officinale* and *Saccharomyces cerevisiae* respectively (250 gm of *Taraxacum officinale* or *Saccharomyces cerevisiae* / 100 kg of feed). On the other hands, four group (T4) was daily fed on basal diet containing 0.5 % mixture of *Taraxacum officinale* and *Saccharomyces cerevisiae* (250 gm *Taraxacum officinale* + 250 gm *Saccharomyces cerevisiae* / 100 kg of feed). Feed and water were provided *ad libitum* during period of experiment (28 days) Tables 1. Live body weight, body weight gain, feed consumption and feed conversion ratio were calculated weekly intervals.

Statistical Analysis

Data of research were carried out in a complete randomized design [22]. The data were subjected to ANOVA according to the general linear model procedure of SAS [23]. Mean were further compared by Duncan's multiple range test at alpha 0.05.

Table (1) composition of experimental diet according to [24].

Ingredient	Percentage %
Yellow corn	**44**
Soybean meal (48% protein)	**40**
Protein concentrate (fish powder)	**7.7**
Sunflower oil	**2**
Premix	**2.5**
Limestone	**1.3**
Salt	**0.3**
Dicalcium phosphate	**1.9**
Multivitamin	**0.1**
Lysine	**0.05**
Methionine	**0.15**
Total	**100**

Results and Discussion

Data of body weight, weight gain, feed consumption and feed conversion ratio were presented in table (2, 3, 4 and 5) which are referred that at the overall period no significant difference ($p \geq 0.05$) were found in all treatments as compared with T1 (control group). The causes may be related to *Taraxacum officinale* and *Saccharomyces cerevisiae* or their combination were applied for a short-term feeding period or at a lower concentration to be efficient in the turkeys' diets. Therefore, any enhanced growth performance of birds receiving dietary probiotic or prebiotic depends largely on the consequent diminishing of the undesirable microbial concentration of the gastrointestinal tract, which competes with the host for nutrients [25]. The present results agree with [26] reported that performance measurements were not affected by the dietary prebiotic and probiotic addition in turkeys from 7 to 21 weeks of age. Similarly, Konca *et al*.[27] indicated that the body weight and weight gain were not affected by both prebiotic and probiotic supplementation in turkey at percent 1 gm per kg basal diet during age 10 to 20 weeks. Zduńczyk *et al*., Stanczuk *et al*.[28,29] showed that feed intake was not significantly affected by dietary prebiotic and probiotic addition in turkeys from 0 to 8 weeks of age. In contrast to other investigations with prebiotic, improvement in the body weight or weight gain or feed conversion ratio have been reported [30,31].

Table (2) Body weight of turkey (gm) during experiment. Mean ± standard error

Age / Treatment	Week 7th	Week 8th	Week 9th	Week 10th
T1 control	3409±91.68	4368.20±90.47	5373±198.44	6427±189.02
T2 *Taraxacum officinale* 0.25%	3403.20±78.91	4390±114.97	5435±102.21	6497.50±115.01
T3 *Saccharomyces cerevisiae* 0.25%	3468±78.44	4391.20±87.88	5402±138.37	6484±103.18
T4 *Taraxacum officinale* 0.25% + *Saccharomyces cerevisiae* 0.25%	3446±82.68	4424±71.60	5464±90.28	6522±85.65

no significant differences between treatments in the same column at a level ($p \geq 0.05$)

Table (3) Weight gain of turkey (gm) during experiment. Mean ± standard error

Age / Treatment	Week 7th	Week 8th	Week 9th	Week 10th
T1 control	799±91.68	959.20±116.06	1004.80±164.20	1054±159.34
T2 *Taraxacum officinale* 0.25%	843.20±78.91	986.80±129.38	1045±149.70	1062.50±109.85
T3 *Saccharomyces cerevisiae* 0.25%	808±78.44	923.20±120.30	1010.80±157.53	1082±198.62
T4 *Taraxacum officinale* 0.25% + *Saccharomyces cerevisiae* 0.25%	836±82.68	978±90.64	1040±116.89	1058±74.90

no significant differences between treatments in the same column at a level ($p \geq 0.05$)

Table (4) Feed intake of turkey (gm) during experiment. Mean ± standard error

Age / Treatment	Week 7th	Week 8th	Week 9th	Week 10th
T1 control	1502±31	1908±84	2476±145	2636±176
T2 *Taraxacum officinale* 0.25%	1543±44	1924.50±68.12	2482.50±152	2640.50±127.39
T3 *Saccharomyces cerevisiae* 0.25%	1522±60	1828.50±1.43	2433.50±111	2644±175
T4 *Taraxacum officinale* 0.25% + *Saccharomyces cerevisiae* 0.25%	1513.50±78.50	1904±72	2470.50±157	2657±167

no significant differences between treatments in the same column at a level ($p \geq 0.05$)

Table (5) Feed conversion ratio of turkey during experiment. Mean ± standard error

Age / Treatment	Week 7th	Week 8th	Week 9th	Week 10th
T1 control	1.879±0.12	1.989±0.09	2.464±0.09	2.500±0.24
T2 *Taraxacum officinale* 0.25%	1.829±0.19	1.950±0.04	2.375±0.35	2.485±0.21
T3 *Saccharomyces cerevisiae* 0.25%	1.883±0.03	1.980±0.01	2.407±0.08	2.443±0.01
T4 *Taraxacum officinale* 0.25% + *Saccharomyces cerevisiae* 0.25%	1.810±0.24	1.946±0.05	2.375±0.24	2.511±0.03

no significant differences between treatments in the same column at a level ($p \geq 0.05$)

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