

Review Article

Efficacy of Garlic (*Allium Sativum*) Supplement on Productive Performances and Egg Qualities of Layers: A Review

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Abstract: Garlic is broadly expanded and used throughout the world as a flavor and herbal medication for the inhibition and cure of a various diseases, starting from infections to heart diseases, investigation has developed more focuses on the use of naturally occurring photobiotic substances to replace the chemical feedstuff additives. Allicin is the chief vigorous constituent of garlic, containing of up to 70% of total thiosulfates. The addition of two to ten percent of partially dried garlic to the egg laying hens had no significant effect on productivity, heaviness or quantity of egg. Supplementing laying hens with dry garlic increases the intensity of egg production and egg mass; but the weight of the egg does not change even when compared to group which did not supplemented with garlic. The findings of several authors have demonstrated that adding up to 1% garlic powder to hens' diets increases both the hens' laying rate and the quality, including weight, of their eggs. The cholesterol content of egg yolk decreases with the addition of garlic powder up to 4g/kg. Plasma cholesterol and triglyceride concentration decreased with garlic powder supplementation and reduced the plasma and egg yolk cholesterol concentration. Garlic is the king of medicinal plants. In general, garlic has antibacterial, antiviral, antifungal and anti-toxin properties. In addition, it strengthens the immune system, improves weight gain, increases the digestibility of ingredients, reduces bad cholesterol and also increases egg quality parameters.

Keywords: Efficacy, Garlic, Laying Hen and Performance

1. Introduction

Eggs are necessary part of the human diet due to plenty of natural, freely available amino acids, fatty acids, minerals and vitamins. However, restricted egg consumption was recommended for long time because of substantial yolk cholesterol content. In addition to this several customers decrease or evade egg consumption for healthiness cases [1]. To improve the dietetic value of eggs, it has been struggling to adjust the content of eggs, particularly to modify the quantity of certain fatty acids [2]. Garlic is broadly expanded and used throughout the world as a flavor and herbal medication for the inhibition and cure of a various diseases, starting from infections to heart diseases. During ancient time, it was the

desire of many scholars to recognize the cholesterol lowering action of garlic [3]. Several medical evidences revealed that garlic is capable of lowering cholesterol in human being [4]. However, not all garlic provisions might be hypocholesterolaemic [5]. Investigation has developed more focuses on the use of naturally occurring photobiotic substances to replace the chemical feedstuff additives [6].

Concluded that some of the phytogetic feed additives have been effectively fused to feed guideline of chicken deprived of any harmful effect or poisonous filtrates. There are numerous natural medicinal herbs that might be used in avoiding lipids accumulate; fats and cholesterol. Marketable basis of garlic are qualified as pesticide to lice, nematodes and parasite larvae distressing a various crops [7]. Garlic (*Allium sativum*) is a medical plant and it received vital role as a therapeutic

instrument in several nations. Considerable evidence shows that allicin is the chief vigorous constituent of garlic, containing of up to 70% of total thiosulfates [8]. Garlic has been established to have antioxidant properties and immunomodulation and antimicrobial activities in poultry [9, 10]. Garlic also minimizes the problem of emerging circulatory sicknesses and its influences, heavy weight, insulin resistance and tumors [11]. Chicken industry led to visible growth in the production of broilers and eggs over the world. Garlic is broadly used for consumption and scientifically believed as possible to reduce the cholesterol and lipids amongst various classes. Conversely, while verified for yolk cholesterol innards of layer hens, the

property of garlic to reduce cholesterol was very controversy [12]. Addition of garlic powder layer improved some hematological value and total immunoglobulin that could contribute to improved blood circulation and immunity of White Leghorns Chickens [13].

Chemical Composition of Garlic

Garlic constitutes allicin and organic selenium compounds which exhibits in reduction of cholesterol, prevent cancer and other diseases [14]. There are several factors that affect the qualities of garlic. These factors includes: pre and post harvesting factors (curing process: [15] irradiation: [16], conservation, pH: [17] storage time: [18] and Temperature: [18].

Table 1. Chemical composition of garlic.

Properties	Values	Nutritional properties 100 gr	Values	constituents g/100g	values
energy	119kcal	water (g)	59	Moisture	61.1
moisture	70%	calories(kcal)	149	crude protein	6.29
protein	4.3 g	lipids(g)	0.5	carbohydrate	30.89
carbohydrate	24.3g	carbohydrates(g)	33.07	fat	0.2
fiber	1.2 g	fiber(g)	2.1	crude fiber	1.5
fat	0.23	manganese(mg)	1672	ash	1.5
ash	23 %	potassium(mg)	401	Ca ml/100m	2900
pH	6.05%	sulphur(mg)	70	p ml/100m	220
acidity	0.722%	calcium(mg)	181	Fe ml/100m	150
				k ml/100m	52900
Source: Alejandra (et al., 2010).		source: (Reyhaneh, 2017)		source: Fadlalla, 2010	

2. Egg Production and Egg Qualities

2.1. Egg Weight and Qualities

The addition of two to ten percent of partially dried garlic to the egg laying hens had no significant effect on productivity, heaviness or quantity of egg [9]. Modern researchers revealed that adding garlic powder of five or 10 g/kg increased number of days the hen lays egg n and a significantly increased weight of egg [19]. Another researcher concluded that supplementing laying hens with dry garlic to the level of (2-8%) indicated increased the intensity of egg production and egg mass; but the weight of the egg didn't change significantly when affected even when compared to those group which did not supplemented with garlic [20].

Including Garlic Powder, Onion Powder and their in layer ration did not significantly affect the mean of egg weight and feed intake of hens per day during his experiment. However, it had significantly improved number of eggs per hen, ratio of egg production, egg mass/hen, and enhanced the hen to convert feed to products [21]. The addition of Garlic Powder, Onion Powder or their mixture didn't affect the shape index, Haugh unit, albumin and shell percentages of laying hens and their mixture highly decreased cholesterol and lipoprotein content in the egg [21]. There is slight increase in albumen height and Haugh units of eggs, when three percent of garlic powder is added to the layers ration, albumen weights increases [22]. He also explained that Egg production declined at 5% GP as a result of decreased feed intake.

Albumen weight significantly increased with egg weight

and peaked with the addition of five percent of Garlic Powder. Yolk weight decreases with increasing percentage of garlic in the layers ration while shape index, shell thickness, albumen pH of eggs, yolk and shell weights remain the same [22].

The addition of garlic to the level of 0, 0.4, 0.8 and 1% didn't effect egg weight, body weight gain and Haugh unit but egg production, feed intake of hens fed 0.8 and 1% garlic decreased [23]. Supplementing egg laying hens with Garlic juice enhanced performances like egg weight and mass number [24].

2.2. Serum and Cholesterol

Blood cholesterol accumulation reduced with the addition of 0.5% garlic powder to the layers feed [25]. Supplementing garlic powder improved egg weight and decreased lipid content in egg yolk in addition to the decline of serum triglyceride of laying hens [19]. The provision of garlic of two to three milligram per hen per day decreased the level of cholesterol in chickens [26]. Formation of lipid takes place within liver and is parted into four stages: 1st acetic acid is changed into mevalonate products within HMGCoA-reductase, 2nd mevalonate derivatives translated to squalene derivatives, 3rd squalene complex converted to demosterol by the steps of lanosterol; zimosterol and kholestadienol, and lastly demosterol changed into cholesterol. It is in this way that garlic decreases the level of cholesterol [27]. The cholesterol content of egg yolk declined as garlic powder is added to ration while the Plasma density and lipoprotein increased [28].

3. Conclusion

Garlic is broadly used for consumption and scientifically believed as possible to reduce the cholesterol and lipids amongst various classes. It can be summarized that the addition of two to ten percent of partially dried garlic to the egg laying hens has no significant effect on productivity, weight and quantity of egg. Albumen height, albumen weights and Haugh units of eggs improved when garlic powder is added to the layers ration. Supplementing garlic powder of in feed regimes decreased lipid concentration in egg yolk as well as serum triglyceride of laying hens. The addition of garlic to the chickens rations decreases cholesterol.

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