

Protein Estimating in Imported Poultry Feed Mixture and Soybean Meal to Iraq

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Abstract

This study aimed to evaluate rate of the protein in the imported poultry feed and soybean meal to Iraq and know the effect of different rates of the protein on the poultry. Samples of used feed in poultry nutrition has collected, where (38) samples of soybean meal took and (62) samples of imported poultry feed mixture and it has been tested in the kjeldahl device. The results indicated the rate of the protein in soybean meal was (36-39) , (41-47) and (48-49) in 3 samples (8%) , 30 samples (80%) and 5 samples (13%) respectively and the rate of the protein in poultry feed was (15-16), (16-21) and (22-24) in 6 samples (6%), 56 samples (90%) and 2 samples (3%) respectively. This study concluded that it must estimate the rate of the protein for the imported soybean meal; poultry feed mixture to ensure the quality of the feed within the frame work allowed.

Keywords: Kjeldahl device; Nutrition; protein; poultry feed mixture; soybean meal.

1. Introduction

Nutrition is one of the factors that determine the success and increased production of poultry sector [3] and the nutritional elements required for healthy growth to the animals know as essential nutrients and there are kinds of it , which it is proteins , carbohydrate , minerals , vitamins , fats and water [13].

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Proteins : It 's a main compounds in animal feeding system , where it enters as main compound in the work of living cells , it has important role in the efficiency of poultry which make it better with more protein [14 , 2 , 16, 7, 10] consists of Carbon , Hydrogen , Oxygen , Nitrogen and sometimes contain important minerals such as Iron , Phosphorus and Sulfur .as well as 26 amino acid .

Eating feed with different concentration of protein has an effect in the poultry feeding system [14, 1].

The required rate by the Iraqi specifications for soybean meal is (44), for starter poultry feed mixture is (23), grower poultry feed mixture is (20) and finisher poultry feed mixture is (16-18).

2. Materials and methods

2.1 Preparation of material

- 1- Prepare NaoH base by dissolving 40 mg of the base in 100 ml of distilled water.
- 2- Prepare 0.1 N standard of H₂SO₄ acid by easing acid ampoule in 1000 ml of distilled water.
- 3- Prepare 0.1 N standard of NaOH base by easing base ampoule in 1000 ml of distilled water.
- 4- Prepare Red Methyl indicator by dissolving 0.1 mg in 100 ml of Methanol.

2.2 Procedure

100 samples has collected included (38) samples of soybean meal and (62) samples of poultry feed mixture to estimate the rate of the protein as following:-

- 1- Grind the sample and take it on a filter paper of whatman 40 type and 0.5 mg weight and put it in the digestion bottle.
- 2- Add 20 ml amount of concentrated Sulfuric acid with indigestive tablet.
- 3- Put the sample in the digestion device with 400 c temperature for one hour.
- 4- Leave the sample until be cool.
- 5- Put the digestion bottle in the kjeldahl device and starting distillation process.
- 6- Add Sodium Hydroxide with 40% rate according to the program of the device which prepared in advance.
- 7- Add 0.1 (20ml) standard of Sulfuric acid for poultry feed mixture and (50 ml) for soybean meal in titration bottle with adding three drops of Red Methyl indicator.
- 8- Titration process has done by adding (0.1) standard of Sodium Hydroxide until the color changes from pink to yellowish Green.

2.3 Calculation

Total acid = amount of (0.1) H₂SO₄ × actual titer

Base = added amount (0.1) of NaOH × actual titer in titration process

Unreacted acid = total acid – the base

N% = unreacted acid × 0.014 / weight × 100

Protein % = N% × 6.25

3. Results

(100) samples were collected included (38) samples of soybean meal and (62) samples of poultry feed mixture and the results indicated that the rate of the protein in soybean meal was (36-39) ,(41-47)and (48-49) in 3 samples (8%) ,30 samples (80%) , 5 samples (13%) respectively as it shown in the table (A) and the rate of the protein in poultry feed mixture was (16-15),(16-21) and (22-24) in 6 samples (6%), 56 samples (90%) and 2 samples (3%) respectively as it Shown in the table (B) :

The table of the protein in soybean meal and poultry feed mixture:-

Table A: protein in soybean meal

Total samples number	Protein rate	Samples number	Percentage of the sample
38	(36-39)	3	8%
	(41-47)	30	80%
	(48-49)	5	13%

Table B: protein in poultry feed mixture

Total samples number	Protein rate	Samples number	Percentage of the sample
62	(15-16)	4	6%
	(16-21)	56	90%
	(22-24)	2	3%

4. Discussion

The results indicated that there is reduction in the required rate for the protein and it was in soybean meal (36-38) at (8%) from the total of the samples and in poultry feed mixture samples is (15-16) at (6%) from the total of the samples and this affect on the poultry , because of the reduction of the protein leads to the reduction of the growth average [8] in similarly , to the reference [11] and increased fat weight of cushion abdomen [14, 2, 15, 4, 9, 15].

There was increasing in the protein rate which reaches in soybean meal (48-49) at (13%) from the total of the samples and in poultry feed mixture is (22-24) at (3%) from the total of the sample and this effect on poultry. Whereas the increasing of the protein rate in the feed leads to increasing in the weight [3] and reduction in abdomen fat rate [3, 4, 6] as well as increasing the protein enters improvements in the size and weight of the egg [8], high growth average [14,5] and increasing in the total amount of the Nitrogen in the productive remains [3] and it had found that the high protein rate with reduction in the energy level in the composition of the nutritional system has positive impact on the growth [12].

5. Conclusion

This study concluded that it must estimate the rate of the protein for the imported soybean meal; poultry feed mixture to ensure the quality of the feed within the frame work allowed.

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