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Nutritional additives in broiler diets

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fulfillment of the requirements for the Degree of Bachelor of
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By
Rawaa Sarhan Abbas

Supervised by
Assist. Prof .Zahira A.AL-Zuhairi

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

فَنَعَلَى اللَّهِ الْمَلِكُ الْحَقُّ وَلَا تَعْجَلْ بِالْقُرْآنِ مِنْ قَبْلِ أَنْ يُقْضَىٰ
إِلَيْكَ وَحْيُهُ، وَقُلْ رَبِّ زِدْنِي عِلْمًا ﴿١١٤﴾

صِدْقَ اللَّهِ الْعَظِيمِ،

من سورة

The gifting

To the one who drenched the empty cup to give me a drop of love

To those whose fingertips are bent to present a moment of happiness

To those who harvest thorns from my path to pave the way for me to learn

To the big heart My dear father

To the symbol of love and lip balm

To the white heart my dear mother

To the pure, kind hearts and innocent souls

To the basil of my life my brothers

Researcher

Certificate of Supervisor

I certify that the project entitled (**Nutritional additives in broiler diets**) was prepared by --**Rawaa Sarhan Abbas** under my supervision at the College of Veterinary Medicine / University of Al-Qadisiyah.

Supervisor

Assist.prof. Zahira AL-Zuhairi

Dept. of veterinary public health

Coll. Of Vet.Med./ Univ. of Al-Qadisiyah.

-- / -- / 2021

Certificate of Department

We certify that ----- has finished his/her
Graduation Project entitled (-----
-----) and candidate it for debating.

Instructor

Dr. Muthanna H. Hussain

-- / -- / 2021

Head of Dept of Int. and Prev. Med.

-- / -- / 2021

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Abstract

Feed additives are considered today a necessity in any product of the feed factories because of their important effect in promoting the general health of the bird for its important role in encouraging the growth of poultry, preventing diseases, improving the physical properties of the feed and the nutritional value as well as the properties of the feed storage Feed additives.

They are all the food and non-food items that are added to the feed mix in relatively small quantities, such as vitamins - mineral salts - antioxidants - antioxidants.

Introduction

Poultry farming is considered an important and influential industry in the national economy and plays a fundamental role in securing animal protein from meat and eggs of high nutritional value at reasonable prices if compared to the prices of meat and other animal products. There has been a clear imbalance between the progress of the poultry industry and the quantity and quality of services provided by animal health for field and laboratory breeders. If we take into account that the majority of our breeders do not pay attention to the necessary importance of the health conditions for breeding, such as securing good housing for birds and adhering to the conditions of general breeding and disease prevention, and this is due in our view to the cultural and technical poverty of some of them and their desire to obtain profit as soon as possible and at the lowest cost. (1)

There is no doubt that this goal is the goal of the public and private sectors and has a positive impact on the national economy and on consumers. However, it has negatively affected the poultry industry because large and small breeders do not depend on the service and expertise of technicians from agricultural engineers specialized in breeding and veterinarians, which led to the spread of many poultry diseases, especially those that cause great economic loss to the poultry industry, and this loss may increase in the future if not Adherence to the provision of good and balanced feed with protein, energy, vitamins and minerals on the one hand, and the provision of technical and veterinary services from monitoring mothers and conducting periodic tests in them and monitoring hatcheries and poultry slaughterhouses as well as poultry of both types on the other hand. Despite these problems, with the increase in the demand for chicken products, including meat and eggs, this led to the development of this industry and interest in it. Instead of manual

poultry service, there have been automatic pens that automatically adapt the place to suit the proper breeding of poultry. The great development in that industry has encouraged companies to develop the types of chickens they offer and improve their genetic characteristics, which provides greater weight and less breeding period, which reduces costs and increases profitability for the jam, as well as the advantage in weight and price for the consumer. In order to know the actual mutations that occurred for that industry and the types of chickens, we must know the original species and breeds.(2)

Chapter 1

The effect of addition of fat to diets on chicken production

Plants and animals contain a group of substances that are insoluble in water while they dissolve in organic solvents and are called lipids. Chemically, fats contain carbon, hydrogen and oxygen, each of which is 77%, 12%, and 11%, respectively. Because they contain a high percentage of carbon, fats and oils are a higher source of energy, estimated at 2.25 more than they contain both carbohydrates and protein. As one gram of fat contains a total energy of about 9.45 kcal, one gram of carbohydrates contains only 4.2 kcal The group of lipids includes fat and its accompanying compounds such as phospholipids, acetrolates, etc.

The addition of fats and their effect on bird

The amount of fat that is added to poultry meat foods varies greatly, ranging from 1 to 10%, and the relative price and abundance of fats of an acceptable quality are of special considerations. In general, the amount that is added is the amount required to produce a kilogram of chicken at the lowest cost. Most chicken meat rations contain 2-4% added fat, so the total fat content will be 6-8%. The use of lipid levels above 2-3% in pellets should be entirely determined by the relative price of energy.(2,3)

Granulation of foods low in fat improves both growth and the rate of food conversion, but granulation of reeds with a high fat content does not lead to this, and douches (soft) foods may improve the rate of food conversion, and sometimes

growth by adding 10% fat.

The main reason for improving results due to both the granulation process and the higher levels of lipid is the increased intake of

nutrient compounds. A good rate of food conversion depends to a large extent on the total energy content of the food, which is the sum of the energy taken from carbohydrates, fats and proteins.

Fats make soft foods less earthy and improve their texture and palatability. They may also cause food to stick together in food and feed, as well as in the formation of poor-quality granules that turn into a fine powder. Equipment for adding fats to soft and pellet feeds has appeared on the market. And antioxidants mixed with fats to reduce rancidity and not break down nutrients like vitamins E and A. In general, the nutritional value of fats is calculated on the basis of 3680 kcal / kg of energy produced, 7700 kcal / kg of beneficial physiological effort (representative energy) when the true values are not known.(4)

fish oil

Adding fish oil may improve the growth and conversion rate of food, so be careful to avoid fish smell. The amount used depends on the amount and type of fishmeal in the diet, the maximum amount of fish oil without fishmeal in the diet should not exceed 2.5%.(4)

Chapter 2

Addition of salts to chicken diets and their effects

1. Calcium phosphate

The phosphates proposed for use in poultry foods contain 21% calcium and 20% phosphorus. Some other sources of phosphates may be used with equal results. Some other sources of phosphates like fluorine-free rock phosphate, steam treated bone powder, crude rock phosphate, monocalcium phosphate, colloidal phosphate, sodium or potassium phosphate and even phosphoric acid may be used in poultry food, depending on some factors such as supply price, costs Transport and handling, fluorine content and biological utilization of phosphorous content.(5)

The phosphorous in the bone powder treated with steam and the phosphorous rock free of fluorine has a benefit of 85-100% for calcium phosphate, and the phosphorous in the raw phosphate rock is somewhat low, and since some specific colloidal phosphates contain up to 1.25% of fluorine, it is It is necessary to determine the levels used in certain foods in order to comply with the instructions regarding the limits of fluorine allowed in poultry foods. And some rock phosphates contain very high levels of the element vanadium, and this should be avoided in the diets of laying hens as this element may reduce the internal characteristics of the egg.

2.Common salt

Eliminating table salt from the food of chicks or hens causes a significant delay in growth. And when using table salt treated with iodine in poultry food, no additional iodine is required. The level of table salt in the food is one of the main factors affecting water intake, and thus the amount of moisture in the stems. Where drinking water

is high in table salt, then it is necessary to remove the salt from the food, as excess salt may cause a decrease in the productive appearance, and table salt treated with iodine contains at least 0.007% of well mixed iodine, prepared by mixing 10 grams of iodide. Potassium with 100 kg of concentrated table salt initially diluted with vitamins and minerals "premix vitamins and mineral salts" Vitamin:

Mineral Premix

Vitamin sources with varying effectiveness may be used in meeting the needs of birds, and products with higher efficacy are more economical, but they require high technical expertise in mixing.

Biological stability and utilization should be taken into account when purchasing sources of vitamins. The suggested vitamin A levels for addition are based on chemically synthesized vitamin A, not fish oil. If fish oil is used as a source of vitamin D₃, consideration should be given to the fact that the vitamin A in this product is less effective than the chemically synthesized vitamin A. When calculating the energy content of foods, fish oil is considered 100% fat and is considered as effective as an energy source, such as animal fat.(6)

Sources of used trace elements should be dry and flow well. While it is not recommended to use manganese oxide, zinc oxide and copper sulfate, they can be substituted with mineral salts of the same minerals to provide equal amounts of these elements.

If iodized table salt is used, this will not be necessary to use any other source of iodine. If table salt does not contain at least 0.015% of potassium iodide, then the requirements for elemental iodine must be taken into account. And when using table salt that is not treated with iodine. Calcium iodate or any other suitable iodine salts are used. When mixed with table salt or limestone powder, they are more stable.(7)

Chapter 3

Addition of vitamins to chicken diets and their effect

Vitamins are nutritional factors that are essential for growth and maintenance of good health.

The requirements for the required vitamins are sometimes covered by natural feed materials. In some cases, the need for a specific vitamin necessitates adding a concentrated source or source to add the vitamin to the diet due to the fact that the content in the natural sources is very low or there may be a loss due to oxidation.

Most formulas for chicken meat diets are not enthusiastic with the addition of fulacene, biotin, ascorbic acid, vitamin B "pyroxene" or thiamine.(9)

Vitamin A.1

Vitamin A is essential for the normal functioning of the epithelial tissues of all membranes in the body. Normal functions such as growth, bone development, resistance to infectious diseases depend entirely or partially on this vitamin.

A requirement is expressed in "international units" of this vitamin per kilogram of food.

0.6 micrograms of beta-carotene equals 1 international unit of vitamin A.

The main sources of carotene or the raw material Provitamin to form vitamin A in chicken meat diets are dried Egyptian or Hijazi alfalfa powder, yellow corn, corn gluten cake. In order to cover the total needs of vitamin A, an additional vitamin A source is always added to this vitamin, especially in the rations in which sorghum or wheat replaces yellow corn, and in foods with a high fat content.

And when suffering from certain diseases such as coccidiosis and chronic respiratory disease, and when birds take off food, it is recommended to increase the content of vitamin A in the food. Any deficiency in the level of vitamin A in the food delays growth, and an excess of deficiency affects the health of birds.(9)

Vitamin D.2

Vitamin D needs are expressed in chick international units. I.C.U per kilogram of food. Chicks benefit from vitamin D3 as efficiently from irradiated animal sterols and fish oils, but they do not benefit from vitamin D2 from irradiated argestrol as efficiently as mammals. And when the mineral salts in the diet are sufficiently balanced, vitamin D does not differ in its efficacy from fish oils or from bio-sterols treated with radiation.

At a certain time, rickets was common in broiler chickens. It is caused by a nutritional deficiency of vitamin D, calcium and phosphorous. Although deficiency in mineral salts is not as severe as symptoms. Chicks with rickets sit on the knee or walk poor gait, are slow in growth and appear unpleasant or without strength. The breastbone becomes curved, the ends of the ribs become thickened, the back and legs become loose and rubbery. Vitamin D3 concentrate is often mixed with yellow corn before it is added to the diet.

3. Vitamin E

Vitamin E is widely found in grains, residues, and alfalfa powder, and it is particularly involved in most of the functions of the chick's tissues, especially in preventing mad chick disease, muscle weakness, but the content may actually decrease as a result of the catabolism resulting from oxidation during storage, especially after Milling and granulation process.

Vitamin E is not unique in its chemical structure. It consists of different tocopherols, which vary to a large extent in biological

activity. The most active is alpha-tocopherol international unit (I.U). It is the biological activity of 1 mg of alpha-tocopherol-dl.

The other form available for addition to feed is alpha-tocopherol acetate-d. One mg of it is equivalent to 1.36 international units of vitamin E.

It is possible that there is an important relationship between vitamin E, antioxidants, amino acids, sulfur, and selenium in preventing vitamin E deficiency diseases. As a safety limit, 5,000 international units of vitamin E per ton are sometimes added to poultry foods.

Vitamin K.4

Chicks may hatch with a very small store of vitamin K. And when feeding with poor feed, bleeding may occur and lead to death from any damage. Bleeding may occur in any part of the chick's body. Vitamin K deficiency delays the time it takes for the blood to clot. Mortality and disease prevalence in chicks due to caecal coccidiosis decreased by adding a source of vitamin K to the diet. There is a direct conflict between sulfur drugs such as the antioxidant sulfaquinoxaline and vitamin K. Vitamin K has been found useful in treating some bleeding conditions.

Vitamin K1 is naturally found in dried hejaz alfalfa powder, grasses, soybean meal and soy oil.

It was possible to separate vitamin K from moldy fishmeal, and vitamin K3, which is a chemically synthesized vitamin K, which is Menadione. Menadione Sodium Bisulfite, which is widely used in food and water, is an additional compound to Menadione, which contains 33% Menadione. Added sources of vitamin K are only used to combat stress caused mainly by drug abuse and disease.

5. Riboflavin (Vit. B2 "or Vit. G)

The characteristic of twisted finger paralysis is riboflavin deficiency. Other symptoms are delayed growth and diarrhea. In food paralysis, chicks walk suddenly on their knee with the toes bent inward. And when the birds are healthy, they quickly respond to riboflavin in the feed. Good sources are the chemically synthesized compound riboflavin, by-products of fermentation, dried dairy products and yeast distillates.(8,9)

6. Vitamin Cyanocobalamin APF-Factor B12

Vitamin B12 is essential for the normal formation of blood cells. It is essential for growth, metabolism, and especially protein metabolism. And this vitamin is related to animal protein sources, and diets in which the main source of protein is of vegetable origin needs to add vitamin B12 sources.

Here are some sources of vitamin B12 and the approximate value of this vitamin in milligrams per kilogram of natural feed.

Poultry waste offal 0.35 feather meal 1.0, fish soluble 0.44, fish meal 22, meat meal 0.11, and in general a commercial source of vitamin B12 is added.

7. Thiamin Vit. B1"

This vitamin called "anti-barberry disease" occurs as a result of a deficiency of this vitamin, a decrease in growth, neurological disorders, disturbance in carbohydrate metabolism and water balance in the body, lack of appetite, ineffective use of energy and lack of this vitamin is uncommon.(10)

Chapter4

Addition of antioxidants to chicken diets

Antioxidants are used in chicken meat diets to prevent rancidity and catabolism due to oxidation of vitamins E and A during storage, mixing and granulation processes as well as to increase the utilization of the first source of vitamin A formation in alfalfa powder.

Butylated hydroxytoluene (BHT) as well as (Santoquin and Dethoxyquin) 1,2 - dihydro 6-ethoxy - 2,2,4-trimethylquinoline are considered as antioxidants for Crazy Chick - Vitamin E deficiency, as well as for catabolism of fat-soluble vitamins E, A, and antioxidants. It does not improve the coloring or benefit of xanthophyll in chicken meat unless oxidizing agents such as linoleic acid are present. And antioxidants do not have a specific role in preventing selenium and vitamin E deficiency.

It is common to add the antioxidant (Ethoxyquin) -1,2-ethoxy-1,6 quinoline trimethyl-2,2,4-dro in many foods at a rate of 115 grams per ton.(11)

And if the food is to be stored for a period of time or where the marketing is through a sectoral store so that the marketing time is not specified, it is better to add antioxidants and vitamins that are more likely to be destroyed in concentrates than in whole foods due to the relatively high concentration of rare mineral salts, also because the concentrates are always stored for relatively long periods of time, it is useful then that the concentrates should contain an antioxidant.

Ethoxyquin has been shown to reduce poultry needs for vitamins E and A by preventing them from being catabolized in food. BHT is somewhat more effective as an anti-feed than Ethoxyquin and may be used to replace Ethoxyquin on a basis of equal weight units.(12)

Chapter 5

Addition of anti-coccidiosis and antibiotic to chicken diets

Anti-coccidiosis is used in most poultry diets to prevent coccidiosis, and the level to be used is what the manufacturer recommends. Take into account to determine the percentage used according to the needs of the situation, and to ensure that the antagonist is not added to the diet before the time of marketing the birds, according to the instructions of the companies producing these antibiotics. When using a coccidia antagonist, special attention should be paid to the amounts of K and A in food.(14,15)

Some of the anti-coccidiosis that are used for chicken meat diets are:

- 1-.Amprolium, Amprol 25%
- 2-.(Arzene (Arsenosobenzene .
- 3-.Glycarbylamide, Glymide .
- 4-.Nicarbazin, Nicarb .
- 5-.Nitrofurazoni, NFZ .
- 6-.Nitrofurazone and Furazolidone, Bifuran .
- 7-.Nitrophenide, Megasul .
- 8-.Polystat .
- 9-.Sulfaquinoxaline, SQ .
- 10-.Trthiadol .
- 11-.Unistat .
- 12-.Whitsyn .

Antibiotics

For most chicken meat diets, antibiotics are added at relatively low levels 4-10 g / ton (of the non-reducing substance) to stimulate growth, and some types of commonly used antibiotics:

Penicillin - Pasteracin - Zinc - Pasteracin - Arthromycin -
Chlortetracycline - Oxytetracycline.

Penicillin - Bacitrcin - Zinc Bacitracin - Erythomycin -
Chlorotrtracycline - Oxytetramycin.

Chicks in polluted housing may show a decrease in the growth rate from the fourth to seventh day. This decrease was not observed when an antibiotic was added to food.

And food is not used well from the fourth day to the twelfth in chicks that are not on antibiotics. And the amount of plaque is large when no antibiotic is given. It appears that antibiotics improve the growth and utilization rate of food by affecting the microorganisms that reduce the absorption of food compounds, and the results obtained from the use of antibiotics vary to a large extent. Sometimes the males respond while the females do not. The age and extent to which different types and strains are affected varies with different antibiotics.

Levels of 100 grams or more of antibiotics per ton of food are used in some diets before the Prestarter Rations that are fed in the first 10-14 days) and high levels of antibiotics are used to combat disease.

Antibiotics with a strong effect (chlorotetracycline - oxytetracycline) are usually strengthened when they are used to combat certain diseases. The amount and types of certain minerals in the diet will affect the antibiotic concentration in the bird's blood.(12,13)

Chapter 6

Conclusions and recommendations

Conclusions:

It was found from the above that food additives have a positive effect on growth and production

Increase the nutritional value of feed, improve the rate of nutritional conversion, increase the palatability of feed, increase its consumption, increase growth, protect animals from diseases, improve the quality of feed during processing, reduce the waste of nutrients, improve the quality of animal products, and increase economic viability.

Recommendations:

- It must not have any harmful or toxic effect on the animal even if it is used for a long time.
- It should not accumulate in the body and have no residual harmful effect on public health
- it does not have a negative effect on plants and other organisms when excreted outside the body
- To have a high degree of stability when mixing and processing feed
- To specify the content of active ingredients.
- To protect the animal from disease with regard to medicinal feed additives;
- Do not violate the Codex Alimentarius permitted limits.

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15 . د. محمد سعيد محمد سامي : انتاج دجاج اللحم للمشاريع الصغيرة والكبيرة. .