

**Republic of Iraq
Ministry of Higher Education
& Scientific Research
University of Al-Qadissiya
College of Veterinary Medicine**



Effect the addition of medicinal plants to diet in productional performance in broiler

A Graduation Project Submitted to the Department
Council of the Internal and Preventive Medicine-College
of Veterinary Medicine/ University of Al-Qadisiyah in a
partial fulfillment of the requirements for the Degree of
Bachelor of Science in Veterinary Medicine and Surgery.

By
Amal Mohammed
Supervised by
Zahira A.AL-Zuhairi

2018 A.D.

1439 A.H.

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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

صَدَقَ اللَّهُ الْعَظِيمُ،

من سورة طه

Certificate of Supervisor

I certify that the project entitled (**-Effect the addition of medicinal plants to diet in productional performance in broiler**) was prepared by **Amal Mohammed** under my supervision at the College of Veterinary Medicine / University of Al-Qadissiyah.

Supervisor

Zahira A.AL-Zuhairi

Dept. of Public health

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

28/ 2 / 2018

Certificate of Department

We certify that **Amal Mohammed** has finished his/her Graduation Project entitled (**-Effect the addition of medicinal plants to diet in productional performance in broiler)** and candidate it for debating.

Instructor

Dr. Muthanna H. Hussain

-- /-- / 2018

Head of Dept of Int. and Prev. Med.

Dr. Muthanna H. Hussain

-- /-- / 2018

Dedication

List of content

Sequence	Subject	Page
1-1	summary	
2-2	introduction	2
3-2	Medicinal plant	3
4-2	Aromatic plant	3
1-3	The important of the research and its objective	3
1-1-3	Classification of medical plant	3
2-1-3	a- Industrial Classification	3
2-3	b- Therapeutic Classification	4
3-3	Methods of extraction of aromatic oils and their chemical composition	7
4-3	Formulation and industrial	8

	utilization	
1-4-3	The different effect of medicinal plant and their aromatic oils on the health and productivity indicators of chickens	9
2-4-3	Improve digestion	9
3-4-3	Antioxidant effect	10
5-3	Antimicrobial effect for pathogenic microorganism	11
1-4	The effect of medicinal plant and their aromatic oils on the efficiency productivity of broiler	13
	Conclusion and recommendation	15
	References	16

Summary:

Antibiotics have been used for decades in poultry feeding to reduce pathological infection and improve their productive performance but consumer concern about the emergence of antibiotic-resistant strains and the accumulation of these antibiotics in products.

Animal feed organizations to ban their use in chicken fodder mixtures as a catalyst for growth and the trend towards additives commercial fodder is of plant origin, including medicinal plants and their aromatic oils, where the latter possesses antimicrobial properties.

is thought to contain many active compounds such as thymol and igonol, where these compounds can be discarded bacterial cell membrane and its interaction with its contents and destruction. It was found that the negative bacteria were more resistant with positive bacteria, and antioxidant effect because they contain many active compounds such as carpacrol and tocopherol. It was found to reduce fat oxidation in the fodder mixture and oxidation of unsaturated fatty acids of the meat. In addition, it stimulates digestion and production of digestive enzymes because they contain many active compounds such as linoleicol.

From the above, medicinal plants and their aromatic oils have a positive effect on the productive performance of the chickens ,it was found that adding many of them to the chicken fodder mixture improved the final weight of the broiler and the daily weight gain rateand the feed conversion ratio.

(1-2) : Introduction

Human knowledge of medicinal and aromatic plants came purely by chance and careful observation ,for thousand years man has been treating himself from disease by using herbs and plants ,try mixing them with some adjusting the mixing rates to achieve a better therapeutic results and a strong effect.

The Egyptians ancient "Pharaohs" were the most people on the world that used medicinal and aromatic plants.(1).

Human began to use plants without any modification or treatment but over time and at the hands of many scientists studied large number of disease and symptoms and how to treat them and medicinal herbs,as the science of chemistry progressed ,scientists learned the secrets of some materials and their composition and began to synthesis of chemical equivalent.(2).

People neglected the cultivation of medicinal and aromatic plants and turned to other crops that earned more profit than it ,remained for a period of time until the world health organization called for the return to use of medicinal plants and aromatic to avoid the complications resulting from drugs.(3).

Despite the fact that the compounds and medicines and modern drugs manufactured and produced by laboratory is highly effective to treat many diseases with cheap prices and more available but it has serious side effects on health and is a double-edged sword is useful and harmful at same time if continued treatment for along time , so began to return to the nature herbal and herbal treatment because of its great benefits of its nutrients as well as the natural active substance that contain them ,which help to prevent and cure disease and have no harmful effects on the person or his health.(4).

(2-2) :Medicinal plants:

Is one or more of its various organs containing one or more chemicals with low or high concentration and has the physiological ability to treat a particular disease or at least reduces the symptoms of the disease if given to the patient either in its pure form after extracting from the plant

material or if it has been used and is still on its first track in the form of fresh vegetable herbs, dried or partially extracted.(5).

(2-3) :Aromatic plants:

Is defined as a plant that contains a member or more of its organic plantation or its transformation on volatile aromatic oils, whether in its free form or in another form, its transformed into a volatile aromatic oil with an acceptable aroma and can be extracted by conventional methods and used in the aromatic fields.(5).

Medicinal plants have been used since centuries to treat various diseases in man and animals. It is not surprising, therefore, that several herbal agents have been empirically used in poultry birds and other animals. Many herbs have a long history of their use even prehistory, in preventing or treating human and animal illnesses. However, even a single medicinal plant or herb consists of many bioactive chemical compounds and may act as a diuretic, as an anthelmintic, as an appetizer, alkaline phosphatase stimulator, antibacterial and antifungal factors.(6).

(2-4) :The importance of the research and its objectives:

1- The importance of this study is to evaluate the use of medicinal plants and their aromatic oils as natural alternatives to antibiotics and its impact on consumer health is determined.

2- The aim of the study is to determine the factors that determine the chemical composition of medicinal plants and the essential oils extracted from them.

3- The impact of these plants and aromatic oils derived from each other in the production of broilers.

4- Identify how some chemical compounds of these plants and their extracts affect the productive aspects and blood for the chickens.

(1-3) : Classification of medicinal plants(7)

(1- 1-3) :A: Industrial classification:

It depend on quality of natural products resulting from a variety of plants and their various uses and most important of these groups:

1- Aromatic plants :

This group produces aromatic excretions in the food ,cosmetics and perfumery industries and is useful in the treatment of disease ,this group include mint,lavender,pebbles,basil,jasmine,cinnamon and camphor.

2- Medicinal plants:

This group consist of plants that produce byproducts that have no odor and taste .they are characterized by biological activity and have medical and therapeutic benefit such as datura,finger of virgin,acetate and cactus.

3- set of condiments:

This group consist of plants that produce an appetite products such as cumin, anise,fennel,broccoli,black bean,black pepper and roast.

4- Insecticides:

This group consist of plants that produce substances have biological effect in the eradication of insect such as smoke plantsand pyrethrum.

5- Coloring agents:

This group consist of plants that produce different color substances that are use in some food industries as a natural source of color such as hibiscus ,saffron,chrysanthemum and chamomile.

(2-1-3) : B:Therapeutic classification:

It depend on the similarity of the medicinal and therapeutic effect of a group of these plants.

1- Nutrient plants:

These plants include fenugreek,anion and lupines bicolor.

2- Tonic plants:

These plants such as zingiber ,dill ,apium and parsley.

3- Laxative plants :

These plants include cassia acutifolia,cactus ,rheum and liaurice.

4- Antiseptic plants:

These plants include thyme ,camphor ,leek,garlic and basil.

5- Anthelmintic plants:

These plants include municipal wolves, Artemisia ,matricariachmomilla and coriander.

6- Sedative plants :

These plants such as poppy ,datura ,fennel ,cloves ,coriander and cumin.

7- Stimulant plants :

these plants include tea , coffee ,mint and gravel.

8- Carminative plants:

these plants such as anis, poppermint , mint ,cumin ,coriander , basil and fennel.

9- Heart tonic plants:

These plants include finger of virgin and lupines bicolor.

10-Anti rheumatismic plants:

These plants include mustard and basil.

Different herbal feed additives, its active components and functions

Plant	Used parts	Active component	Function
Nutmeg (<i>Myristicafragrans</i>)	Seed	Sabinene	Digestion stimulant, antidiarrhoeic
Nutmeg (<i>Myristicafragrans</i>)	Seed	Sabinene	Digestion stimulant, antidiarrhoeic
Cinnamon (<i>Cinnamomum zeylanicum</i>)	Bark	Cimetaldehyde	Appetite and digestion stimulant, antiseptic
Cloves (<i>Syzygiumaromaticum</i>)	Cloves	Eugenol	Appetite and digestion stimulant, antiseptic
Cardmom (<i>Amomum subulatum</i>)	Seed	Cineol	Appetite and digestion stimulant
Coriander (<i>Coriandrum sativum</i>)	Leaves and seed	Linalol	Digestion stimulant
Cumin (<i>Cuminumcyminum</i>)	Seed	Cuminaldehyde	Digestive, carminative, galactagogue
Anise (<i>Pimpinellaanisum</i>)	Fruit	Anethol	Digestion stimulant, galactagogue
Celery (<i>Apiumgraveolens</i>)	Fruit, leaves	Phtalides	Appetite and digestion stimulant
Parsley (<i>Petroselinum crispum</i>)	Leaves	Apiol	Appetite and digestion stimulant, antiseptic
Fenugreek (<i>Trigonellafoenum graecum</i>)	Seed	Trigonelline	Appetite stimulant
Capsicum(<i>Capsicum annuum</i>)	Fruit	Capsaicin	Digestion stimulant
Pepper (<i>Piper nigrum</i>)	Fruit	Piperine	Digestion stimulant
Horsradish (<i>Armoracia rusticana</i>)	Root	Allyl izotiocianat	Appetite stimulant
Mustard (<i>Brassica Nigra</i>)	Seed	Allyl izotiocianat	Digestion stimulant
Ginger (<i>Zingiberofficinale</i>)	Rizom	Zingerone	Gastric stimulant
Garlic (<i>Allium sativum</i>)	Bulb	Alkin	Digestion stimulant, antiseptic

Rosemary <i>Rosmarinus officinalis</i>	Leaves	Cineol	Digestion stimulant, Antiseptic
Thyme (<i>Thymus vulgaris</i>)	Whole plant	Thymol	Digestion, stimulant, antiseptic, antioxidant
Mint (<i>Mentha piperita</i>)	leaves	Menthol	Appetite and digestion stimulant, antiseptic
Shatavari (<i>Asparagus racemosus</i>)	Root	Sapogenins, flavonoids and saponin	Prevention and treatment of gastric ulcers, dyspepsia and as a galactagogue.
Jivanti (<i>Leptadenia reticulata</i>)	Leaves and twigs	Stigmasterol, β – itosterol, flavonoids, pregnane glycosides	Galactagogue, antimicrobial and anti inflammatory
Shatavari (<i>Asparagus racemosus</i>)	Root	Shatavarin-I-IV, quercetin, rutin, hyperoside	Galactagogue

(2-3) :Methods of extraction of aromatic oils and their chemical composition:

The volatile or aromatic oils are extracted from vegetable parts (flowers, leaves, branches, seeds, seeds, fruits, roots, bark, wood, herbs) by distillation (8) Chemical composition is obtained and analysis of the gas chromatography of essential aromatic oils through gas chromatography analysis mass spectrometry (9).

When analyzing aromatic oils we noted that it is a complex mixture of chemical compounds making it difficult to explain the method of its effect.

Generally volatile oil components are divided into three major groups (10):

A-Turbine compounds such as citronellol, terpineol.

B- aliphatic hydrocarbons such as phenolic compounds such as thymol, carvacrol, eugenol.

C-aromatic aldehydes such as cuminal, phellandral

The concentration of the main components of the oil extract may reach 58% or more and these main components are the ones that give the oil extract its biophysical and biological properties for example, when studying the chemical composition of thymus vulgaris extract, we found thymol is mainly composed of phenolic compounds, which may have a concentration of 36%, most notably thymol, the oil extract of thyme has antiseptic properties and therefore can be used as a microbial antagonist (11).

(3-3) : Formulation and Industrial Utilisation:

Several formulations like herbal teas, extracts, decoctions, infusions, tinctures, etc are prepared from medicinal plants (12).

1. **Herbal teas, Herbal remedies:** herbal tea or infusion mixtures are mixture of unground or suitably ground medicinal plants to which drug plant extracts, essential oils or medicinal substances can be added. Infusion mixtures should be as homogeneous as possible.

2. **Drug extracts:** They are preparations obtained by extracting drugs of a certain particle size with suitable extraction agents (menstrua). The extract obtained after separation of the liquid from the drug residue is called miscella. It may already represent the final liquid dose form eg. as a so called fluid extract, or be used as an intermediary product which is to be further processed as quickly as possible.

3. **Aqueous drug extracts:** The following degrees of comminution are used for the extract depending on the type of plant parts. Leaves, flowers and herbs shredded (4000mm); woods, barks and roots shredded (2800mm); fruits and seeds (2000mm). Alkaloid containing drugs powdered (700mm).

A : **Decoctions:** The drug in the prescribed comminution is put in to water at a temperature

above 90°C. The container is suspended in a water bath and maintained at this temperature for 30 minutes, with repeated stirring. The mixture is then strained while still hot.

B: Infusions: One part of the comminuted drug is kneaded several times in a mortar with 3-5 parts of water and left to stand for 15 minutes. The rest of the boiling water is then poured on to the mixture, which is suspended in a container in a water bath and kept for 5 minutes, with repeated stirring at a temperature above 90°C. The mixture is covered and left to stand until cool.

C: Macerates: The comminuted drug is left to stand, with occasional stirring, for 30 minutes after the required quantity of water has been poured on to it at room temperature. The extract is then strained and made up to the prescribed weight with rinsings.

D: Tinctures: Tinctures are extracts from drug plants prepared with ethanol of varying concentration, ether or mixtures of these, perhaps with certain additives, in such a way that one part of drug is extracted with more than two parts, but at most ten parts, of extraction liquid.

E: Fluid extracts: Like tinctures, they are liquid preparations, the difference being that they are more concentrated.

F: Dry extracts: They are usually very hygroscopic and should therefore be ground and mixed under conditions which exclude moisture as much as possible. Intermediate and end product must also be stored under dry conditions.

(4-3) : The different effects of medicinal plants and their aromatic oils on the health and productivity indicators of chickens:

The different effects of medicinal plants and their aromatic oils as feed additives in chicken can be classified in four groups:

(1-4-3): Improve digestion:

Aromatic plant oils are stimulated and activated for digestion and this has been demonstrated by many studies conducted on animals, it stimulates

secretions digestive juice and digestive enzymes such as amylase and lipase.(13).

It has been found that the addition of plants extracts of the labial species "labiatae" such as *Rosmarinus officinalis* to poultry diets may contain the following chemical compounds carvacrol, cinnamaldehyde, capsaicin

that improve dry digestion factor. The addition of thyme to the broiler feeding has improved digestion factor and stimulate functions of digestive system by increasing the production of digestive enzymes. It was noted that ginger and its active compounds had a significant effect in the increased gall bladder secretion and improved intestinal movement effective compounds in *Origanum majorana* have improved digestive functions and digestive system by increasing the release of digestive enzymes and improving liver function (14,15).

Add powder of Anise seeds for drinking water of broiler are useful in the treatment of some digestive diseases such as indigestion.

Anise seeds act as an appetizer due to the presence of important elements in plant seeds and its oil appetizing such as eugenol and anethol

Anise seeds are effective in increasing the rate and activity of digestive enzymes within Small intestines.(15).

Coriander is used to treat indigestion and inflammatory bowel disease (gastric ulceration).

Licorice extract is an appetite stimulant and promotes digestion. It also increases the rate of blood flow in mucous membranes of the gastrointestinal tract and then increase the consumption of nutrients and increase the efficiency of utilization of them.

Ginger and its active compounds have a significant effect in increasing the pH of the intestine and improving intestinal movement.

The essential oils of turmeric improve the absorption of nutrients by increasing the length of intestinal villi, while that the addition of

chamomile blossom to the mixture improved the digestibility factor of the nutrients in the broilers.(10).

(2-4-3) : Antioxidant effect:

Antioxidants benefit in reducing the oxidation of certain nutrients such as unsaturated fats so have been used aromatic plants in poultry diets because they improve the taste of birds for fodder, in addition to being considered as antioxidant.

Use of known synthetic antioxidants such as: hydrolysyl-toluenylbutylate has been questioned because of its potential effect in the occurrence of cancerous diseases and this is making consumers fear from the idea of using animal feed additives in animal feed mixtures.(16).

That the herbs and plants of the labial species "labiatae" Such as rosemary, oregano and *Salvia officinalis* with antioxidant properties as it was found that the addition of these plants limit the oxidation of fat in the ration . chicken meat contains high proportion of unsaturated fatty acids making it susceptible to oxidation process and thus rancidity and corruption.(16).

has been observed that turkeys meat are more susceptible to oxidation compared to chicken meat. This is due to the weaker turkeys' ability to store vitamin "E" in the body tissues where the latter is located in the cell membrane and interact with free radicals and inhibits their effect,

although turkey and chicken are similar in composition to each of the fatty acids.(17).

Therefore, the resistance of the major chicken components to the oxidation process is due to the high concentration of vitamin E in its tissues and which depends on the level addition of alpha-tocopherol acetate for the mixture. The addition of rosemary extract to the diet of poultry increases the resistance of the meat to the oxidation process, as well as the oil extract of the *Origanum* plant.

Carotenoids acts as a primary antioxidant By catching free radicals and as a secondary antagonist to suppress and reduce the effect of mono-oxygen and the action of the tocopherol and sterol compounds interferes with the oil surfaces and release hydrogen which inhibits the step of reproduction and spread of free radicals. As for phospho lipid, it works

synergistically with tocopherol to reduce lipid oxidation in tissues, thus reducing oxidative stress .(18).

(3-4-3) : Antimicrobial effect for pathogenic microorganisms:

One of the most important properties of aromatic plants and their extracts being act as anti-microorganisms pathogenic and there are many studies have demonstrated the effectiveness of these extracts for pathogenic microorganisms.

By studying the effect of 58 type of medicinal and aromatic plant oils on pathogenic microorganisms where the study included "5" strains of bacteria of which were gram positive bacteria and "5" were gram negative bacteria and we found that negative bacteria were more resistant to the effect of aromatic oils compared with positive bacteria, but note that the oil extracted from cinnamon and thyme was effective against both gram positive microbes and gram negative in general.(19)

similar results reached where the study was made on 8 types of gram positive bacteria that reach to the animal through feed such as **E. coli** , **S enteritidis** In terms of their effects on oils derived from thyme, cloves and cinnamon. The reason for the sensitivity of gram positive bacteria more than gram negative is mainly due to negative bacteria has an outer layer that surrounds the cell wall and acts as a barrier to permeability that limits access to "water-damaging vehicles" hydrophobic". Most of the essential compounds of aromatic plant extracts are considered water-threatening, but negative bacteria show resistance larger than the positive bacteria. The chemical composition of aromatic plants extracts varies largely due to a combination of the factors mentioned above. The significant differences between the composition of these extracts cause a different degree of sensitivity in positive and negative bacteria, the lowest effective concentration of aromatic oil is what measures its efficiency

and its ability as a antimicrobial antagonist. Despite the important properties of extracts of medicinal plants as antimicrobial growth inhibitors(20).

The pathogen is not adequately studied because it consists of a large number of chemical compounds so most likely the capacity of these chemical compounds as antimicrobial pathogens can not be attributed to

one mechanism of action, however there are different type of working mechanisms for these compounds. In general, these compounds can differentiate bacterial cell membranes to interact with its contents and their destruction, especially the phenolic compounds, which are mainly responsible for the extraction of medicinal plant extracts .This property is important as an antibiotic and it is phenolic compounds carvacrol, eugenol ,thymo .the essential oil of *Nigella sativa* has a significant inhibitory effect of bacteria of the genus "*Bacillus*, *Staphylococcus*, *Vibrio*" and many types of fungi such as "*Microsporum canis* , *Mentagrophyes trichophyton*".(21).

Anise plant plays an important role in strengthening the immune system for its anti-bacterial effect and through studies conducted found that artemisia and essential oil derived from it have been recorded as antimicrobial and antifungal . volatile oils found in the basil work to resistant of positive and negative bacteria, fungi and yeasts. The active and user part of the Licorice plant is the root because it contains the active substance (calcegin), which has the effectiveness as antibiotics..garlic contains organic sulfuric substances that have antibiotic action.Active compounds in ginger root are shogaol , gingerols, zingiberen and others play an important role in stimulating the immune system and raising immunity in the body and stimulate the bone marrow to produce white blood cells.(20).

(5-3) :The effect of medicinal and aromatic plants and their oils on efficiency productivity of broiler:

In general, there are different and variance effects of aromatic plant extracts on broiler production, among the most experiments that conducted in this field have found that the use of medicinal plant extracts in broiler diets lead to a decrease in the consumption rate of feed intake and thus an increase in the feed conversion ratio while some studies indicated that there was no effect on adding to the productive indicators. That the addition essential oils for plants oregano, rosemary for broiler

diets reduced the amount of feed consumed and improve feed conversion ratio and increased weight gain.(19).

The extracts of cinnamon, thyme and *Nigella sativa* have improved both of the food conversion ratio and reduce the amount of feed intake. the addition of the *Nigella sativa* powder or garlic to feed lead to improved body weight, weight gain and feed conversion ratio, This is due to that the garlic contains the thymoclophenobotate and *Nigella sativa* contain two substances Ngelon and Alesin and these compounds play an antagonist role which lead to an increase in body immunity, which was positively reflected on the general health of birds and the achievement of productive performance.

The *Nigella sativa* also contains many compounds and nutrients necessary to build the body, such as vitamins, minerals, fatty acid and amino acids. Powder or *Nigella sativa* oil stimulates the increase of thyroid hormone which promotes the secretion of growth hormone from the pituitary gland, which affects on the metabolism of proteins and increases the process of protein synthesis, that play a role in body building.(21).

Anise seeds consumed by birds may lead to increased digestibility of protein and fat which is reflected in the efficiency of utilization from these compounds. adding the powder of the hibiscus flowers to the food mixture of the broiler improved both body weight the increase in weight gain and the feed conversion ratio.

The improvement in many productive indicators when adding hibiscus flowers is due to active compounds "protocatechiuc anthocyanin" and its high content of vitamin C which stimulates the secretion of thyroid hormones that play a key role in metabolism. (22)

Where researchers found a positive relationship between vitamin C and increased metabolism of amino acids (tyrosine, phenylalanine) which is necessary in the manufacture of thyroid hormones and maintain the growth hormone secretion as a result of increased basic metabolism.(20). The addition of coriander seed powder to broiler chicken has a good final body weight and liver weight. it can interpretation of the increase in weight and improvement of the feed conversion ratio through the catalytic effects of the digestive system of animals in increase the produce of digestive enzymes and make maximum use of digestion products and promote liver and pancreas functions, It can be due to the

action of essential oils extracted from coriander seeds, especially linalool compounds act as a catalyst.

Coriander seeds contain vitamin C One of the most important in providing good growth of liver in birds as a result of the action of this acid as an additional factor leads to a reduction of the process of protein degradation in liver cells.

Reducing intestinal microorganism leads to increased energy for growth, as these are used the large quantities of digested substances energy in the intestines for the purpose of its lifetime, so reducing the bacterial mass leads to increased energy and improved in weight and feed conversion ratio.

Active compounds as antimicrobial and fungicidal agents in the digestive system. Thereby supporting the natural action of microflora in the intestine as probiotic

It was found that the addition of chamomile powder to chicken diet improved the productive performance of the chickens and reduced cost and reduced cholesterol as well as good properties of quality meat.(22).

(1-4):Conclusions and recommendations

It can be said through the results and data that were exposed in this study of many medicinal plants and their aromatic oils can positively affect on the productive performance of the broilers in many ways. They stimulate digestion and metabolism, as well as anti-microorganisms that negatively affect of the performance of the broiler, which improves growth rates and the utilization rate of food also positively affects the characteristics of the meat, and that its use as an alternative to antibiotics, in addition to being safer for humans, and they are more economical and dispel fear of the harmful effects of adding antibiotics or artificial stimuli to broiler diets so we recommend the following:

- 1- The use of medicinal plant species and their oils, which have been shown to have a positive effect on poultry scientific research to determine the best plants and their oils and the most positive impact on the productive standards of the chickens for general use.
- 2- Analysis of animal products to track the impact and the remnants of active compounds of medicinal plants when added to the diet.
- 3- To study possible interactions between active compounds of medicinal plants and other components of the other diet..

References:

- 1-Hernandez F., Madrid V., Garcia J., and Orengo M.D. (2004). Influence of two plant extracts on broilers performance, digestibility and digestive organ size. *Poult. Sci.* 83, 169-174.
- 2-Rutz F., Rech J. L., Anciuti M. A., and Xavier, E. G. (2005). Nutrition of the modern broiler, Universidade Federal de Pelotas, Brazil.
- 3-Botsoglou N., Spais A.B. (2004). Effect of a mixture of herbal extracts on broiler chickens infected with *Eimeria tenella*. *Anim. Res.* 53, 137-144.
- 4-Acamovic T. and Brooker J.D. (2005). Biochemistry of plant metabolites and their effects in animals. *Proc. Nutr. Soc.* 64, 403-412.
- 5-Greathead H. (2003). Plants and plant extracts for improving animal productivity. *Proc. Nutr. Soc.* 62, 279-290.
- 6-Daferera D.J., Ziogas B.N. and Polissiou M.G. (2000). GC-MS analysis of essential oils from some Greek aromatic plants and their fungitoxicity on *Penicillium digitatum*. *J. Agric. Food Chem.* 48, 2576-2581.
- 7-Seyed D. S., Saeedeh H., Khorsandi A. and Abdolreza S. (2013). The effect of four medicinal plants on the performance, blood biochemical traits and ileal microflora of broiler chicks. *Vet. ARHIV* 83 (1), 69-80.
- 8-Kamel C. (2001): Tracing modes of action and the roles of plant extracts in non-ruminants. In: *Recent Advances in Animal Nutrition*. (Garnsworthy, P. C., J. Wiseman, Eds.), Nottingham University Press, Nottingham, UK. pp. 135-150.
- 9-Abdul-alkader. (2005). In vitro study of some medical plants on the growth of some dermatophytes. *Assuit vet. Med. J.* 34(67):36-42.
- 10-Wenk C. (2006). Herbs, botanicals and other related substances as adequate replacements for antimicrobial growth promoters? In: Barug, D., de Jong, J., Kies, A.K., Verstegen, M.W.A. (Eds.), *Antimicrobial Growth Promoters*. Wageningen Academic Publishers, The Netherlands, pp. 329-340.
- 11-Acamovic T., Brooker J.D. (2005). Biochemistry of plant metabolites and their effects in animals. *Proc. Nutr. Soc.* 64, 403-412.

- 12-Platel K., Srinivasan K.(2004). Digestive stimulant action of spices: Myth or reality? Indian J. Med. Res. 119, 167–179.
- 13-Cabuk M. ,Alcicek A. , Bozkurt M. andImre N. (2003). Antimicrobialproperties of the essential oils isolated from aromatic plants and using possibility asalternative feed additives. II. National Animal Nutrition Congress. 18-20 September,Konya, Turkey, Pp:184-187.
- 14-SoltanM.A.,Shewita R.S. and EL-KatchaM.I.(2008). Effect of dietary aniseseeds supplementation on growth performance, immune response, carcass traits and someblood parameters of broiler chickens.Int.J.Poult.Sci.7(11):1078-1088.
- 15-Jamros,D. and KamelC.(2002) .Plant extracts enhance broiler performance. Innon ruminant nutrition :Antimicrobial agents and plant extracts on immunity, health , performance.J.Anim.Sci.80(E.suppl.1):41.
- 16-Bauer K., Garbe D., Surburg, H.(2001). Common Fragrance and FlavorMaterials: Preparation, Properties and Uses, fourth ed. Wiley-VCH, Weinheim. Bendini.
- 17- A., GallinaToschiT.andLerckerG.(2002) . Antioxidant activity of oregano (*Origanumvulgare* L.) leaves. Ital. J. Food Sci. 14, 17–23.
- 18-Delaquis P.J., Stanich K., GirardB.and Mazza G.(2002). Antimicrobialactivity of individual and mixed fractions of dill, cilantro, coriander and eucalyptusessential oils. Int. J. Food Microbiol. 74, 101–109.
- 19-Faleiro M.L., Miguel M.G., Ladeiro F., VenancioF.and Tavares R. J.C.(2002). Antimicrobial activity of essentialoils isolated from Portuguese endemic species of *Thymus*. Lett. Appl. Microbiol. 36, 35–38.
- 20-Ahmed Z.,Ghaffor A. and Aslam M. (2004). *Nigella sativa* A potentialcommodity in crop diversification traditionally used in healthcare. Project on:Introductionof medicinal Herbs and spices as crops. Ministry of Food,Agriculture, and Livestock,Pakistan.
- 21-NasirZ., AbidA.R.HayatZ. and ShakoorH.I(2005).Effect of *Nigella sativa* seeds on egg production and quality in white Leghorn layers .J.Anim.Plant Sci. 15:22-24.

22-Monsi A. and Onicihi D. O.(2005). Effects of ascorbic acid supplementation on ejaculate semen characteristics of broiler breeder chickens under hot and humid tropical conditions. Anim. Feed Sci. Techn. 34: 114-146.

