Effect of some Alcoholic Cinnamon Extracts in Ovulation and Fertility rate of the Ovary and Oviduct Tissue in Quail

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Abstract

This study was conducted in quail as a particular work for the of histopathological disorders between Sept6, 2018 Nov23, 2018 (77 days), to determine the effect of adding cinnamon alcohol extract to diets in ovulation and the fertility rate of the ovary and oviduct tissue in the quail, there are (3 treatments), and they were divided into 12 cages, each group consists of 10 males with 5 females. In the first group, quails were fed on a standard diet without any additives, while in the second treatment, 300 mg/kg of alcoholic extract of cinnamon was added to the quails' diet, and the third treatment include the addition of 400mg.kg-1 of alcoholic cinnamon extract powder, the results of the histological study showed that the quail diet includes alcoholic cinnamon extract of additives (400 mg per kg) a physiological reproductive activity changes, ovulation and fertility rate were increased without any side effects. In conclusion, the results showed an increase in growth rate and cilia number and ciliated epithelial layer cells in their numbers and shapes in the oviduct, despite the rapid growth and rapid ovulation, unless there was no change in the shape of the egg or a change in its components.

Keywords: Ovary Tissue, Alcoholic Extract, Quail.

Introduction

The use of medicinal and aromatic plants(cinnamon) has grown worldwide. they will be used as whole herbs, powders, aqueous, aquatic, or oily extracts for medicinal effectiveness and quick therapy for diseases(9). *Cinnamomum zeyalanicum* belongs to the family of *Lauraceae*, and its English name is Cinnamon, and the medical part of it is the bark, as the active substance is concentrated in it, which is volatile oils, the rate of which in the plant is about 1% W/V. It is used by students in medical and human treatments as a gas repellent, anti-diarrhea, useful for children's colic, and works to reduce the level of sugar in the blood and reduce the level of fat and cholesterol in the blood and in the tissues of the body (1). Given the importance of medicinal plants in improving the reproductive performance of birds, this study aimed to study the effect of the alcoholic extract of cinnamon plant added to quail diets on the histological characteristics of the oviduct, (10).

Materials and Methods

Synthesis of cinnamon ethanolic extracts.

Acquire locally fresh *Cinnamomum zeyalanicum* chopped into small pieces. To prepare the alcoholic extracts cinnamon, 30 g raw cinnamon (stored in a dried clean glass in a dark place for 2 weeks) was mixed with70 ml of 96% ethanol, then the mixture was filtered by filter paper (Whatman 1) (12).

Animals dissected

Eight animals of each treatment were taken at the end of the fifth week of the quail's life. There have been 16 quail in total, the birds were explained after anesthesia. By Evans and Lahunta (8) and also the following:

1-In a Dissecting Tray, place the animal.

2- Take the epidermis, therefore the ribs and ventrally limbs, until the chest and ventrally limbs are excised area is closed. Gravitation bone Coracoid bone cranial divides the area.

3- Make an incision and the lower abdominal region's skin.

4- The oviduct is inflated after the suture joining this transverse septum is a wall that separates two halves together brains. The pericardial cavity and the lower abdomen are cut.

5- The samples were transferred to the Formalin solutions that had been installed.

Microscopically histologic examination.

Investigate the histological structure of the quail ovary and oviduct by using some chemicals and dyes such as Formalin solution with 10% formalin for Tissue fixation (4). Bouin's Aqueous Solution, Harris Hematoxylin Stain, and eosin stain, this solution is used in the setup (2).

Histological slide Preparation.

According to Luna's paraffin method (11**):** Fixation, for 24 hours, wash in a section in a 10% formaldehyde solution then washer after installation a formalin liquid, All samples were washed by tap water at a 10 % concentration for half an hour, Dehydration for half an hour, the samples were tested through an increasing series of ethyl alcohol levels by change water from of the sample, beginning at 70 %, 80%, 90 %, 95 percent, and 100 percent, clearing test sample for 15 min. with Xylene to

make it more visible, infiltrating to infiltrate the samples, samples transferred into Xylene / paraffin wax mixture (1:1), then incubated for 30 minutes, melted paraffin wax re-cast to the samples, and this step was (repeated 3 times) blocks casting and embedding samples were re-soaked in paraffin wax (which used in filtration step), Melted wax was poured in specific type of blocks. Samples were exposed to putted in air to clear the blocks from bubbles which aggregated at the side-walls of blocks to make blocks settled, sectioning and trimming the molds were waxed and set on a wooden frame using a sharp scalpel. On the Rotary microtome, the mold was placed. Then after, cut into 7-micrometer-thick then sections. After that, sections were placed on clean glass slides and coated by thinned Mayer aluminum layer, then dry on a hot plate at 37˚c (8), Staining is a term used to describe the process of removing a sat colors were used Hematoxylin with Harris-eosin

Microscopy

Microscope Photography a light microscope had been used to examine microscopic slides at various magnification levels. By using micro-slides the samples were imaged using a digital microscope equipped with a digital high-resolution 12-megapixel camera (Canon).

Results and Discussion

The Ovary

According to the findings of a recent study, cinnamon alcoholic extraction has an effect on morphological properties and composition of tissues in quail bird oviduct when compared to the control group (not treated).

1.1. Study sections of the ovary tissue extract of cinnamon treatment of alcohol concentration of 400 mg per kg diet.

The results of the histological study revealed that adding the standard quail feed at 400 mg per kg of alcoholic extract of cinnamon increased. physiological reproductive activity, rate of ovulation and the fertility rate without the appearance of unpleasant side effects or pathological or macroscopic or histological changes, As feeding the birds By alcoholic an extract of cinnamon led to the growth and increase of the ciliated and ciliated epithelial layer cells in their numbers and shapes in the oviduct, The rapid growth and rapid ovulation, but there was no change in the shape of the egg or a change in its components. These results agree with, (5), how observed that an expansion of the granulosa cells forming the inner acacia and an expansion in the surrounding layer, (13) as well as an increase and expansion of the cells lining of ovary, A little congestion in blood vessels, or increase in the number of follicles in the ovary, and the presence of more mature egg follicles compared to the control, and this is due to the fact that cinnamon has a major role in stimulating early ovulation and rapid growth of the ovary and oviduct, similar to the action of the hormone PMSG, which increases reproductive efficiency. The occurrence of increased ovulation, a small increase or a little hyperplasia in the epithelium lining the oviduct, an increase in the size of the oviduct cells, (3) A breakdown or removal of the fatty layer of the plasma membrane. Cinnamon contains volatile oil. Cinnaneylalcohol has a major role in causing changes in productive performance (7), the addition of cinnamon extract led to an increase in the number of

eggs produced, especially in the first days

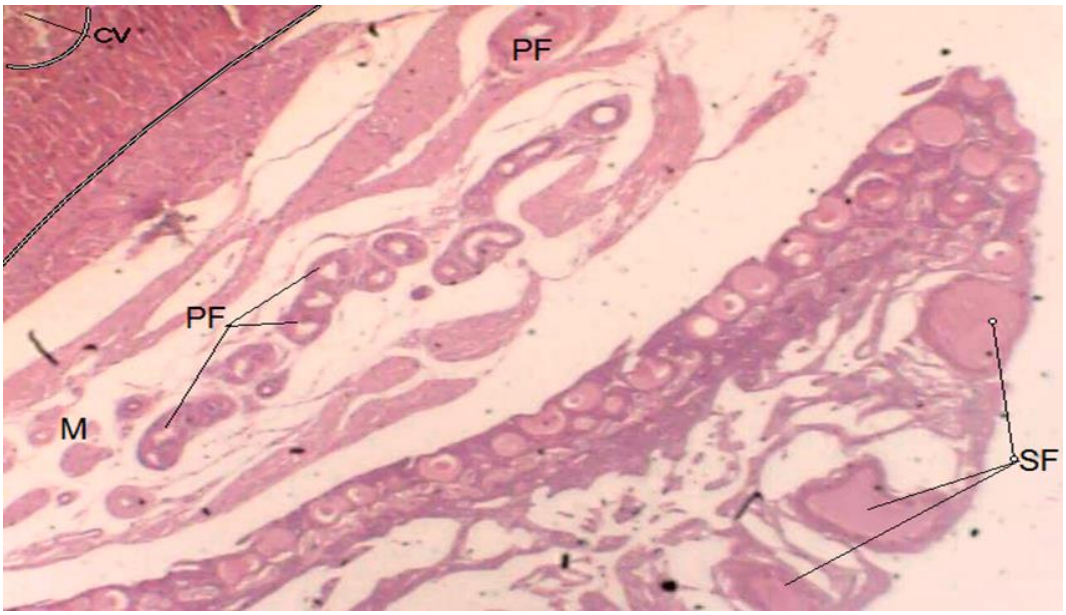

Figure 1: Shows the effect of the alcoholic extract of cinnamon (400 mg.kg^{-1}) on the growth and differentiation of the ovaries of quail and the clarity of the large and size of the ovarian follicles (Hematoclin-Iosin, 400X). Note, PF: Primary follicles, SF: Secondary follicles, M: Medulla, C: Cortex, CV: Central vein.

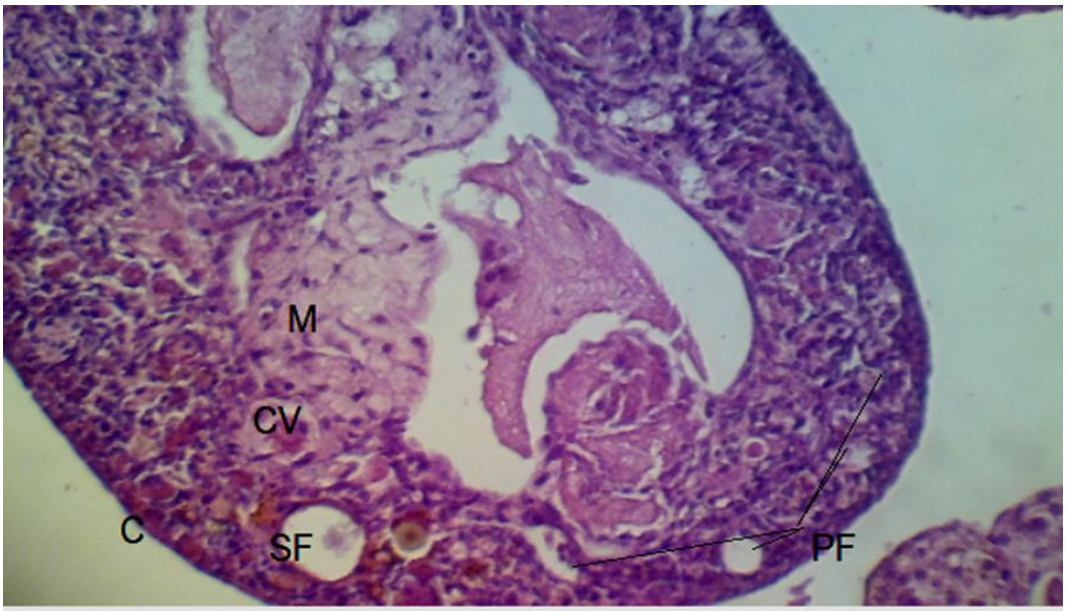

Figure 2: A cross-section of the ovary of a female quail treated with alcoholic extract of cinnamon (400 mg per kg at concentration). Note the growth of primary ovarian follicles, their differentiation, and their large numbers in equilibrium with the control. Note, PF: Primary follicles, SF: Secondary follicles, M: Medulla, C: Cortex.

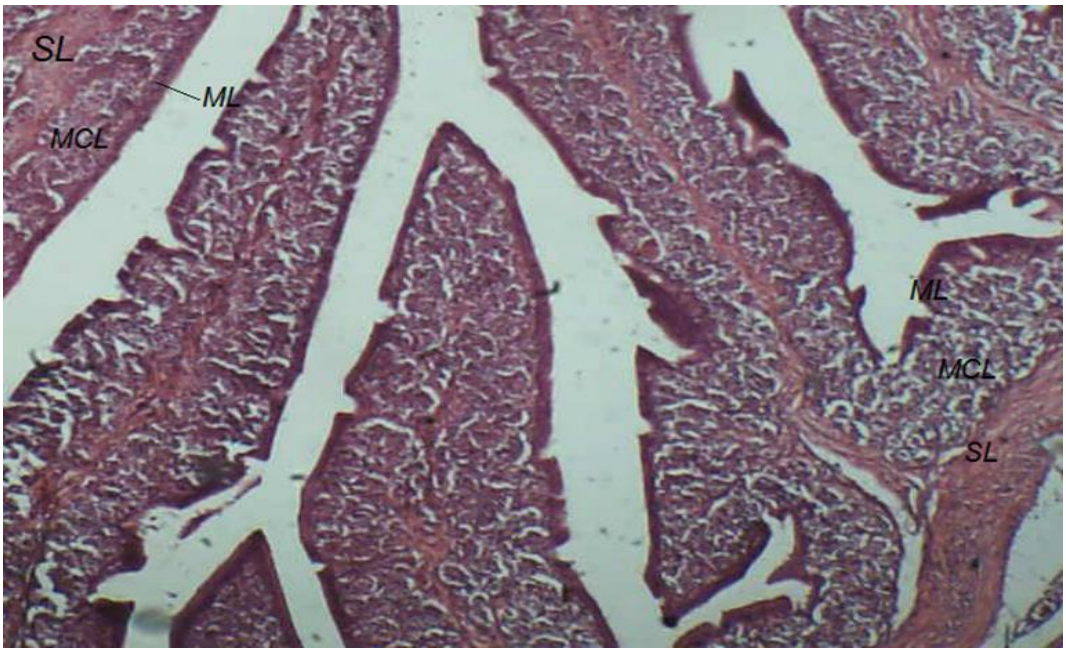

Figure3 : A cross-section of the oviduct of a female quail treated with alcoholic extract of cinnamon (400 mg per kg at concentration). Note the folds emerging from the oviduct and the layers that make up the oviduct, note the expansion and increase of serous cells and the occurrence of oligoclase (SL), the muscle layer (ML), and note the layered Surface mucous membranes (MCL) (Hematoxylin-eosin stain, 400X).

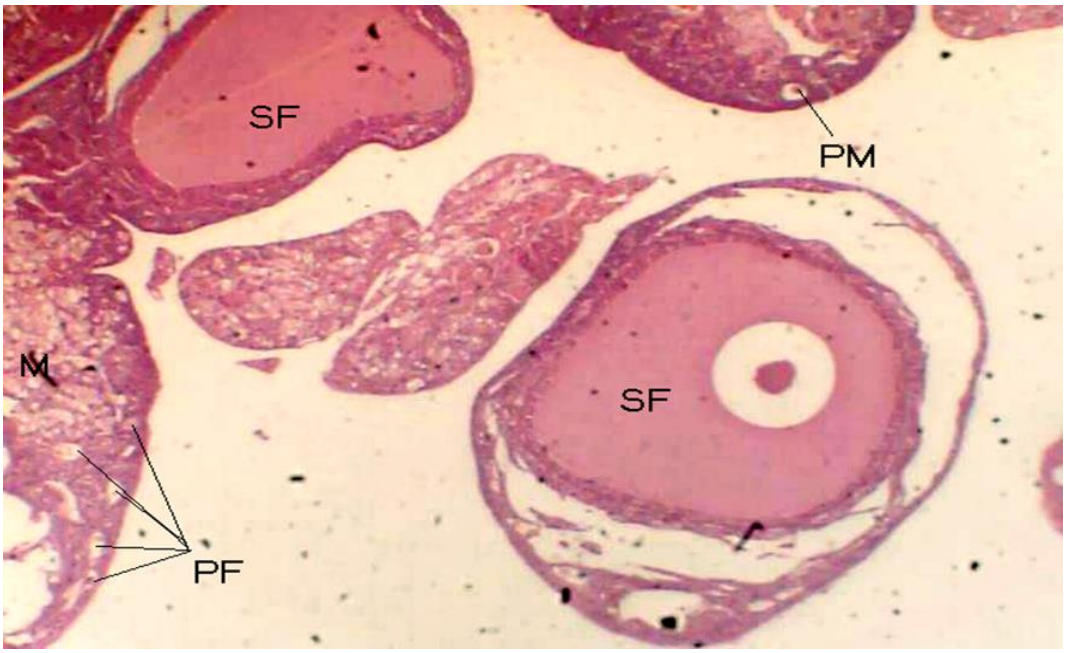

Figure 4: A cross section of an ovary of a female quail treated with alcoholic extract of cinnamon (400 mg per kg at concentration). The growth of the immature primary ovarian follicles is widely scattered in the ovary. 400X).

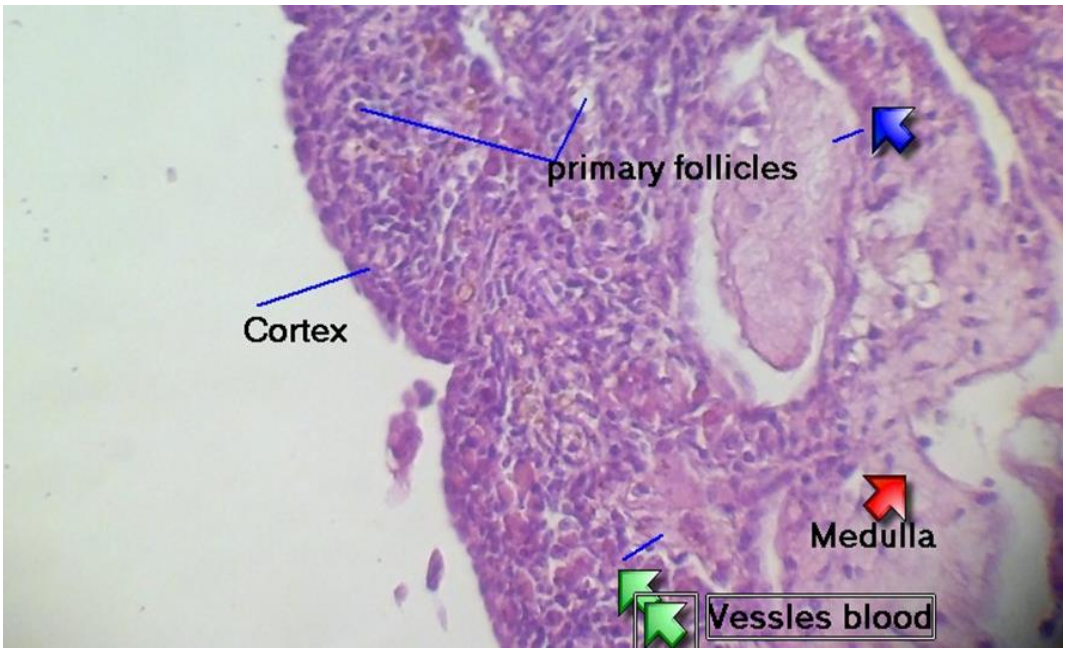

Figure 5: A cross-section of the ovary of a female quail treated with alcoholic extract of cinnamon (400 mg per kg at concentration). He noted the ovary and the areas it consists of, the cortex, which increased in the height of its cells. As for the bas, he noticed a shrinkage in its cells and a little congestion in the ovarian blood vessels, and differentiation of the primary follicles Immature prematurely (hematoxylin-eosin stain, 400X).

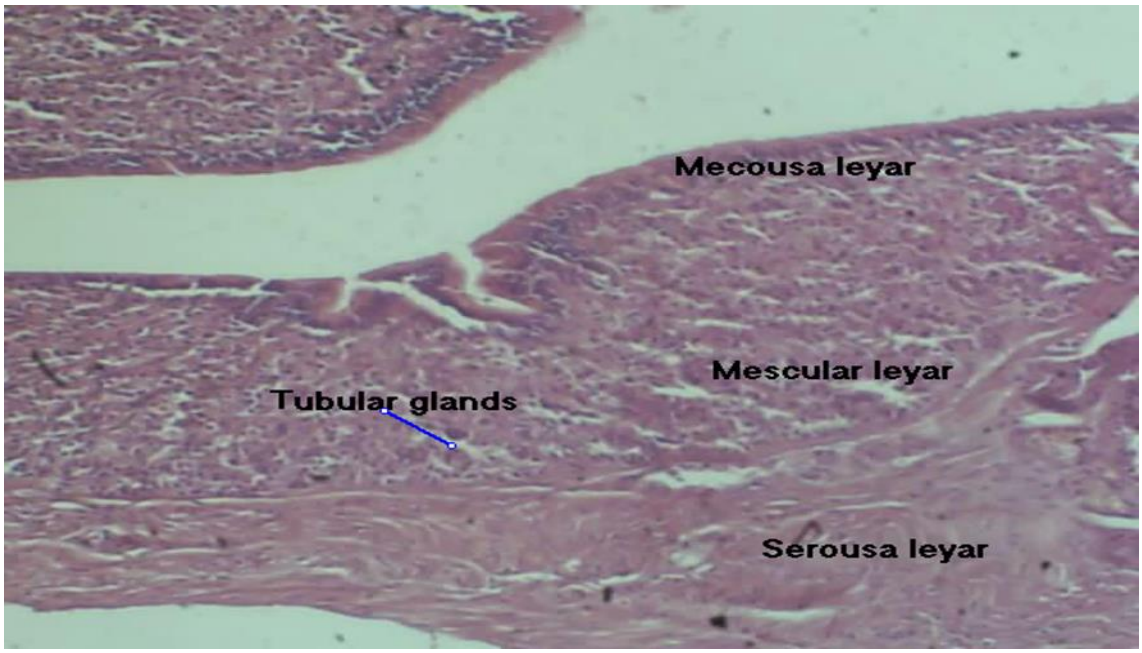

Figure 6: A cross section of the oviduct of a female quail treated with alcoholic extract of cinnamon (400 mg per kg at concentration). Note the layers that make up the oviduct, which are the mucous layer, the muscle

layer and the serous layer, where an increase in the height of their cells occurred, and the tubular glands (Hematoxylin-eosin stain, 400X).

of egg production, and this is consistent with what was reached, indicating that adding cinnamon extract leads to an increase in egg production, inhibits the secretion of corticosterone and stimulates the frontal lobe The pituitary gland secretes the sex stimulating hormones (FSH) and LH, thus increasing the number of eggs produced. (6)

Conclusion

Based on the results obtained from the current study, it is clear that the alcoholic extract of cinnamon powder has a significant effect on improving the rate of ovulation and fertility of the Japanese quail, with the addition of medicinal plants and herbs or their extracts (400 $mg.kg^{-1}$ diet) has an important effect in improving the reproductive performance of the bird.

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Conflict of interest

The authors have no conflict of interest.

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