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**Research article**

# Effect the size of follicles and season on levels of some biochemical parameters in follicular fluid of Iraqi female one-humped camel (*Camelus dromedarius*)

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## Abstract

*The aimed of the current research to compare biochemical constituents in ovarian follicular fluids of Iraqi one-humped she-camels (Camelus dromedarius) during the autumn, winter and spring in different follicles size of the ovaries. Classified in to, follicles sized 2-5 mm considered as small follicles (SF), 5–9 mm considered as medium follicles (MF) and 10–19 mm considered as large follicles (LF) were harvested from 107 adult female camels from the slaughterhouse. A Study was conducted during the period from 1/10/2016 to 1/7/2017. Results showed that there was decreased significantly (P<0.05) in total protein in (LF) in spring and in (SF) in autumn when comparative with other seasons, also decreased in (SF) on spring while increased significantly (P<0.05) in (SF) on winter when comparative with other follicles size. Cholesterol increased significantly (P<0.01) in (SF) on spring and in (LF) on winter, while decreased in (MF) on autumn when comparative with other seasons, also increased in (SF) on spring and in (LF) on winter when comparative with another follicles size. Glucose increased significantly (P<0.05) in (SF) and in (MF) but decreased in (LF) on winter when comparative with other seasons, while increased significantly (P<0.05) in (SF) on winter, also increased in (LF) on autumn when comparative with other size of follicles. Results showed that there were significant differences (P<0.01) and (P<0.05), in total protein, cholesterol and glucose in different size follicles and in different seasons (autumn, winter and spring) of a study.*

**Key words: follicles, one-humped Camel, season.**

## Introduction

The dromedary camel is a seasonally reproductive animals, breeding season consider a relatively short (1). Fluid in follicular had a many of biochemical, the metabolites is produced from within the follicles or derived from the serum, were banded with the follicular cells metabolic activity (2). The theca and granulosa cells formation The follicular fluid within the follicles of ovaries in initial development, the Graafian follicle (3), most of the proteins and many components of the follicles its easily cross through the basal lamina to inside the antrum of follicular or, go towards circulating system to the blood. Cells of the ovaries secrete a many of soluble substances such as steroids, growth factors and other factors like peptidergic in to the FF (4).The current study aimed to compare between some levels of biochemical parameters (glucose, cholesterol and total protein )of Iraqi female one- humped camel *(Camelus dromedarius)*.in deferent size of follicles and season.

## Materials and Methods

### Ethical approval

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The Animal Ethical Committee of Veterinary Medicine College, University of Al-Qadisiyah, Iraq, has approved the present study under permission No: 373

Ovaries collection from (107) adult female camels, The age of camel was determined by observing the conformation of teeth, clinically normal reproductive tracts , were collected from a Diwaniyah slaughter house and put in a box containing ice and send to the laboratory later within 1 to 1.5 hour post slaughter. From October 2016 to Jun 2017, A follicle were classified visibly as SF, M F and LF (measured by Vernier caliper). There is no knowledge of nutritional state or reproductive of these she camels was available.

**Statistical Analysis**

For analysis the date were arranged in different group according to mean, stander error, F-test (Student test), analysis of variance and chi squire (5).

## Results

Data show in table (1, 2, 3) respectively the metabolic compound (total protein, cholesterol and glucose) showed significantly differences (P<0.01) and (P<0.05) of follicles in different size and seasons.

**Table (1) Total protein concentration of follicular fluid in different size follicles at different seasons in Iraqi camels (*Camels dromedarius*)**

| Total protein g/dl | (Autumn) | (winter) | (Spring) |
|---|---|---|---|
| **LF** | 6.72±0.13 aA | 6.76±0.9 aB | 3.64±0.02 bC |
| **MF** | 6.21±0.16 aA | 5.48±0.07 aB | 5.32±0.10 aB |
| **SF** | 6.34±0.25 bA | 8.16±0.13 aA | 7.42±0.3 abA |

- **Different Small letters mean significant differences (P<0.05) within the same size of follicles.**
- **Different large letters mean significant differences (P<0.05) between the different sizes of follicles.**

**Table (2) Cholesterol concentration of follicular fluid in different size follicles at different seasons in Iraqi camels (*Camels dromedarius*)**

| Cholesterol mg/dl | (Autumn) | (winter) | (Spring) |
|---|---|---|---|
| **LF** | 6.96±0.62 bA | 17.51±1.23 aA | 8.25±0.35 bC |
| **MF** | 7.92±0.76 bA | 11.34±1.16 aB | 13.26±1.42 aB |
| **SF** | 8.14±0.85 bA | 7.53±0.22 bC | 19.57±2.14 aA |

- **Different Small letters mean significant differences (P<0.01) within the same size of follicles.**
- **Different large letters mean significant differences (P<0.01) between the different sizes of follicles.**

**Table (3) Glucose concentration of follicular fluid in different size follicles at different seasons in Iraqi camels (*Camels dromedarius*)**

| Glucose mg/dl | (Autumn) | (winter) | (Spring) |
|---|---|---|---|
| **LF** | 87.20±13.26 aA | 74.18±4.56 bC | 84.13±3.27 aA |
| **MF** | 75.42±10.22 bB | 93.17±6.17 aB | 83.32±6.14 bA |
| **SF** | 70.36±8.12 cB | 132.67±5.26 aA | 87.13±5.22 bA |

- **Different Small letters mean significant differences (P<0.05) within the same size of follicles.**
- **Different large letters mean significant differences (P<0.05) between the different sizes of follicles.**

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## Discussion

Total proteins they constitute a major part of living protoplasm, all enzymes and many hormones that regulate biochemical reactions are functional proteins (6). It has decreased significant (P<0.05) in LF on spring (law breeding seasons) when comparative with other seasons autumn and winter (reproductive seasons). While in MF increased significant (P<0.05) on winter when comparative with autumn, in MF there is no significant differences (P<0.05) in all seasons of the study. The study is recorded no significant differences between the size of follicles in autumn, while in winter and spring its increased significantly (P<0.05) when decreased size of follicles. This study are no agreement with results obtained (7) but agreement with (8). Cholesterol is the source of hormones steroidal involvement (estrogen & progesterone) hormone (9), There has increased significant differences (P<0.01) in LF& MF on winter when comparative with other seasons. The autumn not effected on cholesterol concentration of all follicles size while in winter its increased significant (P<0.01) when increased size of follicles, but in spring decreased significant (P<0.01) when increased size of follicles. This study are not agreement to results obtained by (10). But partial agreement with (8). Glucose is an essential source of energy in the ovary, It has a key role in processes of metabolism in the ovaries, Consisting from the glycolysis in the granulose cells (11) and regulates steroid hormone genesis (12; 13). There are decreased significantly differences (P<0.01) in LF on winter when comparative with other seasons, due to increased ovarian activity, while increased significantly in MF & SF on winter when comparative with other seasons. In autumn its increased in LF when comparative with MF & SF, but on winter decreased significant (P<0.01) when increased size of follicles, while in spring the size of follicles not effected of glucose concentration due to law ovarian activity. These results of this study are similar to results obtained by (14). However, not in agreement with (10) Differences in results may be due to the difference in the nutritional and physiological state of animals. The biochemical Metabolites in the fluid of the follicle are necessary for ripening of the oocyte. Therefore, differences of it may affected of the development and quality of the oocyte (15).

**Conclusion:** the concentration of total protein, cholesterol and glucose effected on the seasons and size of follicles.

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