

## Study the Effect of Pregnancy on the Levels of both Cholesterol and Albumin In Pregnant Ewes

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### ABSTRACT:

Blood samples were collected from ten pregnant goats every two weeks for the period of March-August, and blood serum was extracted for using analysis of albumin and cholesterol. The results showed that levels of albumin were gradually decreased with the progress of pregnancy while cholesterol levels remained about normal rates compared to non-pregnant ewes, and the lowest level of albumin was on the fifth month of pregnancy about 21.4 gm/l, while cholesterol is highest in the same month it was about 1.84 gm/l. The study of these biochemical indicators gives a clear idea for the researcher and specialist in the medical field about these vehicles and the importance of them in understanding the body's metabolism and physiology beside the risk of imbalance of these measurements in increase or decrease on the lives of both the mother and the fetus.

**Keyword:** *blood serum, albumin, cholesterol, ewes, pregnancy*

### INTRODUCTION

Pregnancy is a physiologic metabolic process in the body (Krajncakova et al., 2003). And the biochemical blood measurements such as albumin and cholesterol are important indicators of metabolic efficiency of animals (Karapehliyan et al., 2007). During pregnancy they participate in producing and processing energy needed for fetal development and this may affect the blood serum biochemical levels, these values are also affected by other factors such as race, age, malnutrition, fetal growth and birth season (Swanson et al., 2004).

Several methods were used previously of laboratory chemicals but shown with high error rate and currently rely on modern methods based on the principle of a quantum physicist in measuring the concentration of these substances in the blood serum and projector UV spectroscopy (uv-spectro photometer 2601).

The Discovery that cholesterol is a central component of gallstones (and James Gurr, 1975) and highlighted its importance for the body as large effective in transporting fatty acids from one place to another (Davidian, 1990). And the level of cholesterol in the blood serum is affected by some factors, including age, weight, sex and feature proportions of cholesterol and lipoproteins (Lipoprotein) gradually rise during pregnancy in ewes (Sanson et al., 1984), and excessive cholesterol in ewes during pregnancy may lead to (preeclampsia) pregnancy toxemia and this leads to loss of fetuses and mothers (sweet, 2005). Blood plasma contains proteins called plasma proteins include albumin, fibrinogen and parts of globulins, most plasma proteins in the liver, and studies have indicated the existence of two types of simple proteins composed of amino acids only associated with the bonds chain right there and albumin and globulin (sweet, 2005). Identification of the natural levels of blood plasma proteins is necessary because there are many physiological and pathological situations affecting the level of these proteins including estrous cycle and pregnancy which

occurs during which changes let us temper and hormonal and different anatomical and believes that there is an inverse relationship between increasing cholesterol and decreased albumin during pregnancy in ewes (Sandabe et al., 2011). Factors that affect the rate of albumin in the body are age, weight and sex.

### MATERIAL AND METHODS

This study was conducted on (10) ewes ranged in age between (4-2) years, all in good health and have pregnancy and childbirth. Collected blood samples from the jugular vein of sheep by sterile medical syringes with capacity (5ml) during the first three months of pregnancy, the rate of collection of blood was every two weeks. After the blood is put in the clean tubes free of anti-coagulant substance tubes are then placed in a centrifuge (3000-1500) round per minute for (10-15) min in order to get the serum. Then pull the serum by syringe and transfer to plastic tubes parameter and kept frozen in temperature (20 °C) until analysis. And we use optical wavelength spectrometer nm (630) in the calculation of the concentration of albumin, wavelength nm (480-520) in the calculation of the concentration of cholesterol. And used to measure both albumin and cholesterol Kit ready KIT factory by Biolabo French reagents and followed the instructions in the kit for the preparation of samples before reading a spectrophotometer.

### RESULTS AND DISCUSSION

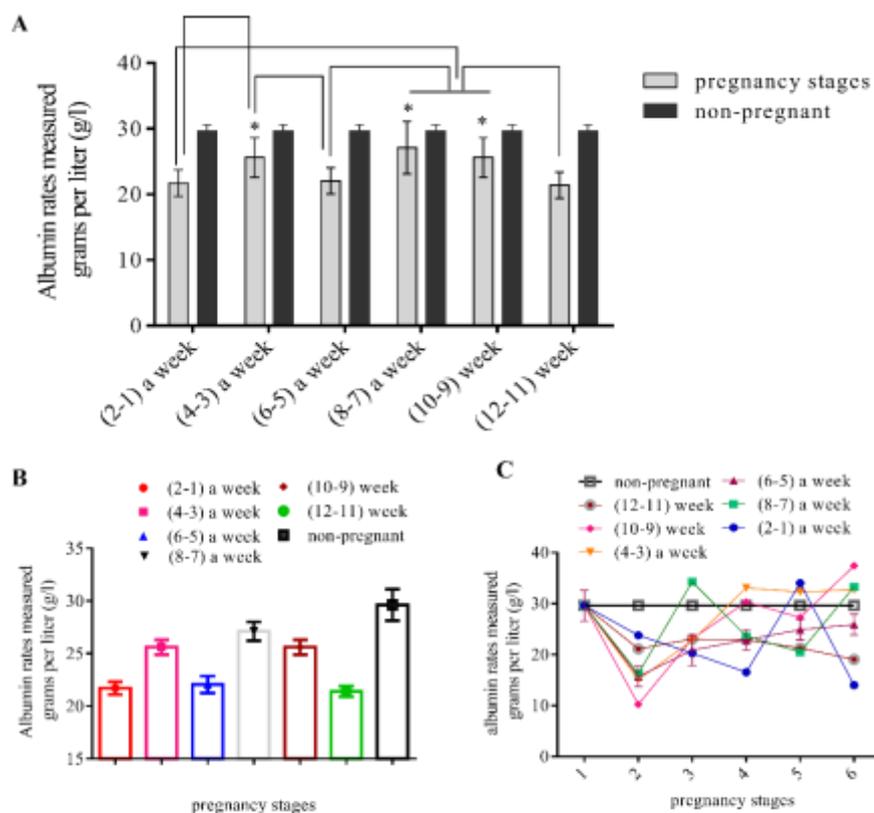
Effect of pregnancy on albumin level it can be seen that albumin decreased during pregnancy compared to non-pregnant ewes (figure1 : A, B, C) and (Table1). This due to movement of albumin and some other amino acids from the mother's body toward the fetus to make dynamic manufacturing proteins that are needed in different body muscles and tissue building (Antunovic et al., 2002; Sandabe et al., 2011).

**Table 1:** Concentration and albumin rates measured in grams per liter (g/l) during pregnancy compared to non-pregnant ewes.

weeks pregnancy stages	1	2	3	4	5	Rate
(2-1) a week	23.8	20.3	16.54	34.0	14.0	21.7
(4-3) a week	16.3	34.3	23.6	20.5	33.3	25.6
(6-5) a week	15.7	20.9	22.9	24.9	25.9	22.06
(8-7) a week	15.09	22.8	33.1	32.3	32.7	27.1
(10-9) week	10.26	23.10	30.315	27.3	37.4	25.6
(12-11) week	21.10	23.05	22.9	21.3	19.06	21.4
non-pregnant	29.63					

**Table 2:** focus and cholesterol rates measured in moles per liter (Milli Mole/l) during pregnancy compared to non-pregnant ewes.

weeks pregnancy stages	1	2	3	4	5	Rate
(2-1) a week	1.9	1.9	1.9	2.2	2	1.98
(4-3) a week	0.1	0.1	1.5	0.1	0.2	0.4
(6-5) a week	1.8	1.9	1.9	2	2.2	1.96
(8-7) a week	2	1.9	2	1.8	1.9	1.92
(10-9) week	2.1	1.9	2	1.7	1.8	1.9
(12-11) week	2.3	2.1	1.8	1.1	1.9	1.84
non-pregnant	1.23					



**Figure:1**

**Figure1: Albumin measured in pregnancy compared to non-pregnant ewes.** (A) Albumin concentration during pregnancy in ewes. There is a significant inhibition in Albumin concentration during pregnancy especially at the beginning and end of pregnancy period as compared with non-pregnant ewes.

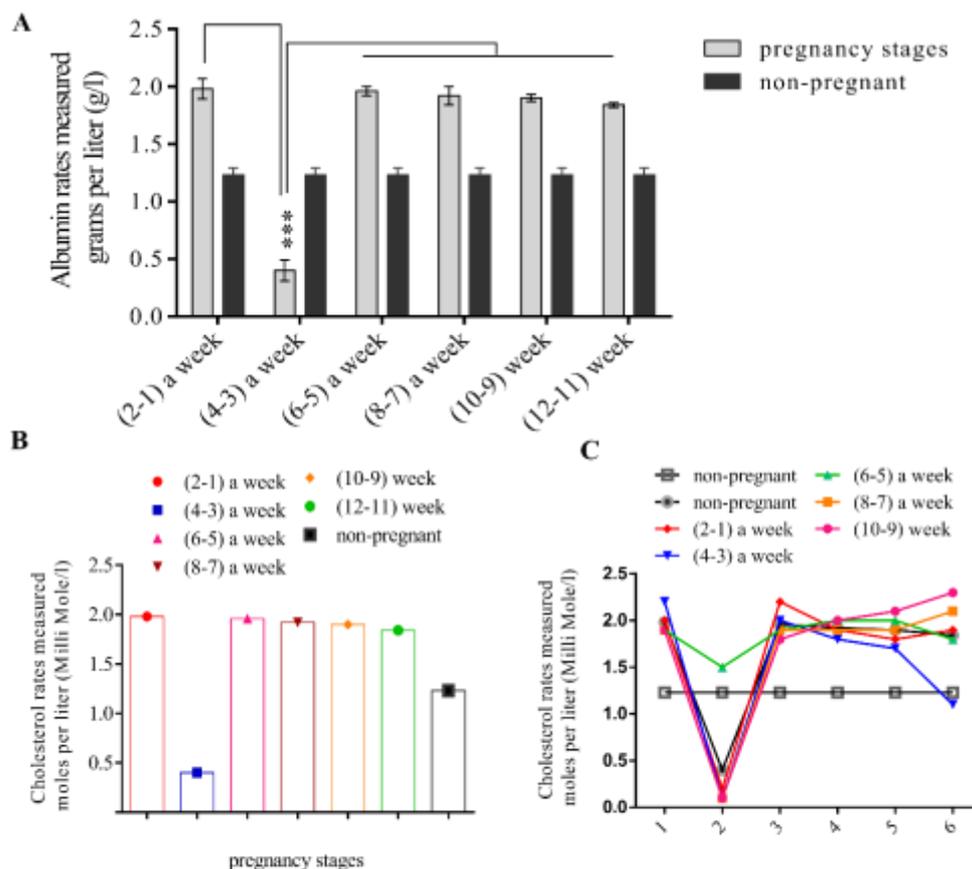
(B) Albumin concentration in blood of pregnant ewes. Measured every two weeks, albumin starts to decrease from the onset of pregnancy and reach the peak of inhibition during the 11-12 weeks of pregnancy when compared with non-pregnant ewes. (C) concentration of Albumin protein during pregnancy measured every two weeks. There is clear decrease in Albumin concentration in blood of pregnant ewes especially near the end of pregnancy period.

As for cholesterol, (Table 2) and (figure 2 : A, B, C ) shows the concentration of cholesterol during pregnancy rates compared

with non-pregnant ewes, and note that the table and figures showed cholesterol had increased during pregnancy this is consistent with the results of some researchers who have confirmed that high (Piccione et al, 2009; Sandabe et al.,2011; Schlumbohm et al.,1997)

Perhaps it could be explain that this increase because of weak tissue response on cholesterol (target tissue) to insulin and at the same time increasing the movement of some fatty acids fatty tissue to provide rich sources of energy for the developing fetus, this disparity in cholesterol level observed in both pregnancy and leering at female cycle because it represents the raw initial material that makes steroid hormones in the body (Iriadam 2007).

Other researchers disagree with our findings (Ozpinar and Firat, 2003) this may be due to differences in type or breed animals or feed type.



**Figure:2**

**Figure 2: Cholesterol measured in pregnancy compared to non-pregnant ewes.** (A) Cholesterol levels during pregnancy in ewes. Cholesterol started to elevate at the beginning of pregnancy and continue in this manner till the end of pregnancy as compared with non-pregnant ewes. (B) Cholesterol concentration during pregnancy in ewes. A significant increase in cholesterol can be noticed in our results except during 3-4 weeks. There was a steady increase in cholesterol along the period of pregnancy in ewes as compared with non-pregnant. (C) Cholesterol concentration in the blood of pregnant ewes. Measured every two weeks. Results shows that cholesterol levels start gradually increase with the progress of pregnancy which reach peak concentration in the period between 9-10 weeks of pregnancy.

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