REPRODUCTIVE HORMONAL ASSAY OF SHEEP INDUCED WITH OESTRUS SYNCHRONIZATION AND SUPER OVULATION

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ABSTRACT
This study investigated estrus synchronization and the effect of super ovulation on the reproductive hormonal assay of Yankasa ewes. Serum progesterone (P4), Luteinizing Hormone (LH) and Follicle Stimulating Hormone (FSH) were evaluated on a total of 24 synchronized ewes. Blood samples were collected from the ewes after super ovulation with prostaglandin and Gonadotrophic Hormone on day 0 and day 14, and were randomly allocated to four groups (T_1 control (n = 6, no hormones); T_2 (n = 6, received Cetromates 0.5ml/ewe); T_3 (n = 6, estrus animal), and T_4 (n = 6, were pregnant)]. Progesterone concentration of pregnant ewes showed a steady increase of 3.58ng/ml, Luteinizing Hormone level increased significantly during estrus to maximum 2.001U/ml and Follicle Stimulating Hormone Level increased significantly during estrus at 1.80mU/ml. It is a useful means of diagnosing pregnancy in ewes by Hormonal methods after synchronised with super ovulated.
Keywords: Luteinizing hormone, Follicle stimulating hormones, Ewes, Progesterone

INTRODUCTION

Oestrus synchronization and super ovulation protocols are based on hormones that occur in the ewe during her cycle. Controlled reproduction in sheep is generally aimed at breeding sheep at younger ages, advancing the sheep breeding season, inducing more frequent lambings and super births (Gordon, 2012). These procedures have been carried out successfully using super ovulation and oestrus synchronization (Rahaman *et al*., 2008). The basis of Oestrus synchronization and super ovulation as described by Rahaman *et al*. (2008) is centered on the predictable control of events linked to the animal's reproductive physiology. This control of reproductive events can be achieved through the use of pharmacologically and biologically active agents.

Hormones play a valid role in the reproductive processes of the ewe and their qualitative assessment as well as quantitative determination readily provides a means of assessing the reproductive readiness or otherwise of the ewe (Gordon, 2012). Thus, an assay of reproductive hormones of ewes subjected to super ovulation and Oestrus synchronization will provide a picture of the reproductive readiness of ewes.

Premature luteolysis is the use of exogenous progesterone to prolong luteal life by stimulating the activity of natural progesterone produced in the corpus luteum. Super ovulations on the other hand are the hormonal treatments for harvesting increased acolytes from the ovary more than the normal quantity (Omotense *et al*., 2016). The efficacy of the protocol used in inducing super ovulation and Oestrus synchronization can readily be assessed using an assay of the reproductive hormones of the ewe; hence, the problem is the need to determine the efficacy of super ovulation induction and Oestrus synchronization protocols. The objective of this study was to assess the presence of reproductive hormones after the induction of super ovulation and oestrus synchronization.

MATERIALS AND METHODS

The research was carried out at Chaha farm, Federal College of Animal Health and Production Technology, Vom. Vom is situated in Jos South Local Government Area of Plateau State. Plateau State is located in Nigeria's middle belt. It lies between latitude 08 24' N and longitude 08 32 and 010 38 East and altitude ranges between 1,200 meters and 1,829 meters above sea level, the climate has been described as near temperate. The average temperature is between 19^0C to 22^0C, mean annual rainfall is usually recorded during the wet months of July and August (Blech, 2003)

Twenty-four (24) nulliparous ewes aged between 10 to 12 months, having a weight between 20 to 25 kg were sourced from the Chaha farm and used for the study. The ewes were randomly grouped into four groups in a Completely Randomized Design (CRD) group categories as T_1, T_2, T_3 and T_4 consisting of 6 ewes each. They were housed during the study period, fed *ad-libitum* a concentrate ration (17% CP 10. 19MJ ME/Kg) at the rate of I kg per ewe per day and provided with water *ad-libitum*. Routine management and herd health programmes were adhered to as described by Majyagbe (1985) and NVRI (2019).
Blood was collected before and during the initiation of super ovulation and oestrus synchronization. 2mls blood sample was collected through the jugular vein as described by Edward (2015) and taken to the laboratory for the

analysis of hormonal assay. The presence and quantity of the following hormones were detected and determined in the laboratory as described by Edward (2015). Luteinizing Hormone (LH), Follicle Stimulating Hormone (FSH) and Progesterone (P4).

All generated data was analyzed using the Analysis of Variance (ANOVA) and significant means separated at the 5% level of significance using the Least Significant Difference (LSD) method. The analysis was carried out using the version 25 of the SPSS software.

RESULTS AND DISCUSSION

Table 1: Hormonal assay of ewes induced

Hormone	Treatment Group				
	T^1	T^2	T^3	T^4	SEM
Luteinizing Hormone (LH) mIU/ml	1.00^{b}	0.50^{b}	2.00^{a}	1.00^{b}	0.210
Follicle Stimulating Hormone (FSH) mIU/ml	$1.50a^{b}$	1.30^{b}	1.80^{a}	1.70^{ab}	0.078
Progesterone (P4) ng/ml	3.40^{b}	1.40^{c}	1.70^{c}	3.85^{a}	0.400

^{abc} Means within row having different superscripts are different significantly ($P<0.05$); SEM = Standard error of mean

The result of the hormonal assay was pooled before inducement as T_1 (1.00mIU/ml. 150mIU/ml, 3.40ng/ml) which was controlled, few hours after inducement as T_2 (0.50mIU/ml, 1.30mlU/ml, 1.40ng/ml), during estrus (heat) T_3 (2.00mIU/ml, 1.80mIU/ml, 1.70ng/ml) and during pregnancy T_4 (1.00mIU/ml, 170mIU/ml. 3.85ng/ml). Which shows a highly significant different during the estrus period with (3.85ng/ml). Values range of 0.50 to 2.0 mIU/ml of Luteinizing hormone was recorded in this study. The values are within the normal range values of 1.24 to 7.8 mIU/ml reported by Niswender (1989). The value range of 1.30 to 1.80 mIU/ml of Follicle Stimulating Hormone was recorded. The value is less compared to the normal range of 5-20 mlU/ml reported by Cheng *et al*. (1981). In ewe, progesterone levels raise few weeks in during the early stage of pregnancy. And the secretion of progesterone in placenta. The Corpus Luteum made considerable total progesterone produced by the ewe through a large part of gestation. However, the progesterone level was rise in treatment 4 with 3.85mg/ml which is lowered compared to the result of Alwan, (2009) who showed a range between 6.70 13.71 ng/ml in his research. The luteinizing hormone in T_3 indicates a rise of 2.00mIU/ml.

CONCLUSION

In conclusion, the hormone in the ewes were higher in T_1 for follicle stimulating hormones (FSH) and luteinizing hormone (LH) which was during estrus. In T_4, the hormones were higher in progresterone because progesterone is usually higher during pregnancy. Therefore, it is recommended that prostaglandin can be used in stimulating luteinizing hormone, follicle stimulating hormone, and progesterone for the purpose of early breeding in ewes.

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