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AN INVESTIGATION INTO THE MECHANISMS INVOLVED IN THE DEPRESSION OF
OVULATION RATES IN EWES GRAZING OESTROGENIC LUCERNE

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A B S T R A C T

The reproductive performance of 123 Romney and Border Leicester x Romney ewes was compared after they grazed oestrogenic lucerne or non-oestrogenic ryegrass/clover pasture.

To synchronize oestrus prior to the experimental treatment, progestagen-impregnated intravaginal sponges were inserted in all ewes for 14 days. In Experiment I, which involved 42 Romney and Border Leicester x Romney ewes, the animals grazed treatment pastures for one complete oestrous cycle. Blood samples were taken at intervals throughout the cycle and luteinizing hormone concentrations were determined. Ovulation rates and the numbers of follicles present on the surface of the ovaries were recorded at laparotomy, three days post-oestrus.

In Experiment II, which involved 81 Romney ewes, oestrogenic lucerne or non-oestrogenic ryegrass/clover pasture was grazed for a complete oestrous cycle, or treatments were interchanged in mid-cycle. All ewes were slaughtered three days post-oestrus and their reproductive tracts were recovered and individually identified. Ovulation rates and the numbers of follicles on the surface of the ovaries were recorded. After sectioning the ovaries, all follicles of a diameter greater than 2.0mm were recorded. Sections of tissue from the vagina, cervix, uterus and fallopian tubes of each ewe were mounted, stained with haematoxylin and eosin, and the height of their epithelial cells measured.

The ingestion of oestrogenic lucerne for one complete oestrous cycle depressed ovulation rates by 29 percent (0.67 ovulations per ewe) in Experiment I and by 22 percent (0.40 ovulations per ewe) in Experiment II. The ingestion of oestrogenic lucerne for part of the oestrous cycle,

depressed ovulation rates only if it was consumed for the latter half of the cycle.

Oestrogenic lucerne did not significantly influence the secretion of luteinizing hormone over the pre-ovulatory period, or at any other stage of the oestrous cycle.

There were no significant differences in the total numbers of ovarian follicles present, in the numbers of follicles on the surface of the ovaries, or in the numbers of large follicles (with a diameter of greater than 3.5mm) present, between the treatment groups.

The ingestion of oestrogenic lucerne did not increase significantly, the height of epithelial cells in genital tract tissue, when compared with that in ewes grazing non-oestrogenic ryegrass/clover pasture. Similarly, there was no significant difference in uterine weights. This is in contrast to published data where lucerne is fed to speyed ewes.

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T A B L E O F C O N T E N T S

	Page
ABSTRACT	ii
ACKNOWLEDGEMENTS	iv
PREFACE	v
LIST OF TABLES	ix
LIST OF FIGURES	xi
INTRODUCTION	xii

CHAPTER I

<u>REVIEW OF LITERATURE</u>	1
(A) PHYTO-OESTROGENS	1
(i) Phyto-oestrogens in Pasture Plants	1
(ii) Factors Influencing Phyto-oestrogen Levels	4
(iii) The Metabolism of Phyto-oestrogens in Sheep	6
(iv) Phyto-oestrogens and Reproductive Failure in Sheep	8
(B) THE MECHANISM OF ACTION OF OESTROGENS	12
(C) EXOGENOUS OESTROGENS AND REPRODUCTION IN THE EWE	13
(i) The Oestrous Cycle	13
(ii) Gonadotrophin Secretion	15
(iii) The Reproductive Tract	18
(iv) Oestrogen Receptors	19
(D) FOLLICLE MATURATION IN THE EWE	20
(i) Patterns of Follicle Growth and Atresia	20
(ii) Hormonal Control of Follicle Maturation	21

	Page
(E) OVULATION IN THE EWE	25
(i) Factors Influencing Ovulation Rates	25
(ii) Postulated Mechanisms of Ovulation	26
(iii) Blockade of Ovulation	28
(F) THE PURPOSE AND SCOPE OF THE INVESTIGATION	29

CHAPTER II

<u>MATERIALS AND METHODS</u>	30
(A) EXPERIMENTAL PLAN	30
(B) LUCERNE AND CONTROL PASTURES	31
(C) ANIMALS	31
(D) OESTRUS SYNCHRONIZATION	32
(E) HORMONE ANALYSES	32
(F) CERVICAL MUCUS ANALYSIS	33
(G) UTERINE AND OVARIAN WEIGHTS	34
(H) FOLLICLE POPULATIONS	34
(I) REPRODUCTIVE TRACT HISTOLOGY	34
(J) ANALYSIS OF DATA	34

CHAPTER III

<u>RESULTS</u>	36
(A) LUCERNE OESTROGENIC POTENCY	36
(i) Lucerne Coumestan Content	36
(ii) Daily Coumestan Intake	36
(B) EWE LIVEWEIGHTS AND OESTRUS	37
(i) Ewe Liveweights	37
(ii) Oestrus Synchronization	39
(iii) Oestrus-Ovulation Interval	39

	Page
(C) LUTEINIZING HORMONE SECRETION	40
(i) During Oestrous Cycle	40
(ii) Pre-Ovulatory LH Peak	40
(D) OVULATION RATES	43
(i) Experiment I	43
(ii) Experiment II	43
(iii) Corpora Lutea Diameter	45
(E) FOLLICLE POPULATIONS	45
(i) Surface Follicles	45
(ii) Total Follicle Populations	48
(F) OVARIAN AND REPRODUCTIVE TRACT RESPONSES	48
(i) Ovarian and Uterine Weights	48
(ii) Tract Histology	52
(G) SUMMARY	53

CHAPTER IV

<u>DISCUSSION</u>	55
(A) OESTROGENIC LUCERNE	55
(B) OESTRUS PHENOMENA	55
(i) Synchronization of Oestrus	55
(ii) Oestrus To Ovulation Interval	56
(C) LUTEINIZING HORMONE SECRETION	57
(D) DEPRESSION OF OVULATION RATES	59
(E) FOLLICLE POPULATIONS	61
(F) PROGESTERONE SECRETION	63
(G) COUMESTANS AND THE REPRODUCTIVE TRACT	64
(H) CONCLUSIONS	65
BIBLIOGRAPHY	71

L I S T O F T A B L E S

	Page
Table 1-1	The relative potencies of phyto-oestrogens administered orally or intramuscularly. 3
Table 1-2	Oestrogenic lucerne and reproductive performance 11
Table 3-1	Lucerne coumestan content 36
Table 3-2	The daily coumestan intake (mg/day) of ewes ingesting 1 kg (DM) of lucerne. 37
Table 3-3	Mean ewe liveweights (kg) 38
Table 3-4	Mean plasma LH concentrations (ng/ml) during the oestrous cycle, in ewes grazing pasture or oestrogenic lucerne 41
Table 3-5	Pre-ovulatory LH concentrations (ng/ml) in ewes grazing pasture or oestrogenic lucerne 42
Table 3-6	Mean ovulation rates for ewes grazing pasture or oestrogenic lucerne - Experiment I 43
Table 3-7	Mean ovulation rates for ewes grazing pasture or oestrogenic lucerne - Experiment II 44
Table 3-8	Comparisons of the differences in ovulation rates between treatment groups - Experiment II 44
Table 3-9	Mean corpora lutea diameter (mm) three days post-oestrus 45
Table 3-10	Surface follicles of greater than 3.5mm diameter, corpora lutea and follicles per ovulation for ewes grazing pasture or oestrogenic lucerne - Experiment I 46
Table 3-11	Surface follicles of greater than 2.0mm diameter, corpora lutea and follicles per ovulation for ewes grazing pasture or oestrogenic lucerne - Experiment I 47

	Page	
Table 3-12	Ovarian follicle populations of ewes grazing pasture or oestrogenic lucerne - Experiment II	49
Table 3-13	Total number of follicles of greater than 3.5mm diameter, corpora lutea and follicles per ovulation - Experiment II	50
Table 3-14	Total number of follicles of greater than 2.0mm diameter, corpora lutea and follicles per ovulation - Experiment II	51
Table 3-15	Follicles greater than 2.0mm diameter, per gram of ovarian tissue	48
Table 3-16	Ovarian and uterine weights (g) of ewes grazing pasture or oestrogenic lucerne	52
Table 3-17	Epithelial cell height (μ) of reproductive tract tissue from ewes grazing pasture or oestrogenic lucerne	52

L I S T O F F I G U R E S

	Page
Fig. 1-1	Phyto-oestrogens f 3
Fig. 1-2	The metabolism of formononetin in sheep . . . f 6
Fig. 1-3	Postulated mechanism of oestrogen action within target cells f 12
Fig. 2-1	Experimental plan - Experiment I f 30
Fig. 2-2	Experimental plan - Experiment II f 30
Fig. 3-1	Distribution of the onset of oestrus- Experiment I. f 39
Fig. 3-2	Distribution of the onset of oestrus- Experiment II. f 39
Fig. 3-3	Onset of Oestrus-LH peak interval f 39
Fig. 3-4	LH secretion over the oestrous cycle f 41
Fig. 3-5	Pre-ovulatory LH secretion f 42
Fig. 3-6	Ovulation rates f 44
Fig. 3-7	Post-ovulation follicle populations f 51

f refers to following page