

Effect of Male Factor on the Typology of Vagina Lumen Epithelia Cells in the Female Greater Grasscutter

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Abstract

Fourteen female grasscutters were divided into the following treatments: No contact (NOC), Visual-Acoustic-Olfactory contact (VAOC), Acoustic-Olfactory contact (AOC) and Full Physical contact (FPC) with the male. The female animals were housed in pairs with all the treatments having a replicate each at the beginning of the study except VAOC, which had no replicate. Vagina smears were collected every other day from all the females for 7 days. The cells in the smear were classified into intermediate, parabasal, superficial and metoestrus epithelial cell. In addition to the vagina epithelia cells the presence of leucocytes and mucous were also observed. Intermediate (21.00 – 97.00%) and parabasal cells (2.00- 58.00%) dominated the smear in all the treatment groups. Intermediate cells were highest in treatment group VAOC (60.33%) and lowest in FPC (41.0%) contrary to parabasal cells, which were highest in treatment, group NOC (44.00%) and lowest in VAOC (18.67%). Male influence seemed to exert no impact on the abundance of the vaginal epithelia cells in the treatment groups. In conclusion, male contact levels did not have any effect on the occurrence of vaginal epithelia cells. In addition, irregular presentation of vagina epithelia cells observed in the study indicated that the grasscutter could be an induced ovulator like the rabbit.

Keywords: vagina epithelia cells, male influence, grasscutter

Introduction

The reproductive cycle of the female Grasscutter is poorly understood because its oestrous cycle is uncharacterized. The opening and closure of the vaginal orifice cannot be used to determine oestrus in the animal (2), though it is thought to reflect the stages of the animal's oestrus cycle (3). Examinations of vaginal epithelium have been found to be useful in characterizing the oestrus cycle of a wide range of mammals especially that of dogs, cats, sheep, goat, cows and rodents (4, 5,6). The morphological features of the epithelia cells comprises of parabasal, intermediate, superficial and metoestrus cells (8). However, information on the pattern of vagina epithelia cells of the grasscutter is not available. Male presence among female animals increases reproductive efficiency. Therefore, this study investigated the types of vagina epithelia cells and the influence of male contact levels on their occurrence in the female grasscutter.

Materials and Methods

Fourteen female greater grasscutter were housed in the pit type pens at the Teaching and Research Farm, Obafemi Awolowo University, Ile-Ife. The 14 animals were divided into the following treatments: No contact (NOC), Visual-Acoustic-Olfactory contact (VAOC), Acoustic-Olfactory contact (AOC) and Full Physical (FPC) with the male. In AOC and VAOC, the male animal was housed in adjacent compartment between the females, while visual contact between the male and females was blocked with a screen in AOC. In FPC female animals were caged with the male in the same compartment while in NOC, only females were housed in a compartment without a male to prevent all form of contacts. Vagina smear was collected with a cotton swab every other day for seven days irrespective of the vagina status. The smears were air-dried and stained with Leishman stain. They were observed under the light microscope at a magnification of x100 for the presence of epithelial cells and

leucocytes.

The mean percentage of the epithelia cells in each of the treatment were compared between the treatments and vagina status by one-way ANOVA. All analysis was carried out using the SPSS 17.0 software.

Results and Discussions

Cell type found in the vaginal smear of the animals in this study were parabasal, intermediate, superficial and metoestrus

epithelia cells. The four cell types were similar to those observed in other hystricomorphic rodents such as the chinchilla and the Agouti paca (14, 15). The same cells types have also been reported in the dog and the rabbit, which are induced ovulators (4, 10). In addition to the vagina epithelia cells the presence of leucocytes and mucous were also observed. Table 1 showed the mean percentage occurrence of the epithelia cells.

Table 1: Mean percentage of epithelia cells types in the vaginal lumen of female Grasscutter

TREATMENT	CELL TYPE			
	PARABASAL	INTERMEDIATE	SUPERFICIAL	METEOESTROUS
FPC	40.33 ± 1.20 ^{ab}	41.00 ± 3.61 ^a	10.33 ± 3.93 ^b	8.33 ± 0.88 ^b
VAOC	18.67 ± 8.01 ^{ab}	60.33 ± 14.77 ^b	14.00 ± 6.08 ^a	7.00 ± 2.08 ^a
AOC	27.00 ± 3.79 ^{ab}	57.33 ± 6.94 ^b	8.67 ± 1.45 ^c	6.67 ± 2.85 ^c
NOC	44.00 ± 11.59 ^{ab}	49.67 ± 10.84 ^a	8.00 ± 2.31 ^b	5.00 ± 0.58 ^b

^{ab} Means with different superscript on the same row differ significantly ($p < 0.05$, Duncan test)

^{AB} Means with different superscript on the same column differ significantly ($p < 0.05$, Duncan test)

FPC = Full Physical contact

VAOC = Acoustic-Olfactory contact

AOC = Acoustic-Olfactory contact

NOC = No contact

Intermediate (41.00 -60.33%) and parabasal (18.67- 44.00%) cells dominated the smears in all treatment groups. There was no significant effect of male exposure type ($p > 0.05$) in the mean percentages of all the vaginal epithelia cells except parabasal cells. On the other hand, within VAOC and AOC intermediate cells occurred more than the other cell types ($p < 0.05$). Superficial cell predominance did not occur similar to what was observed in female rabbits isolated (10).

These observations suggested that the female Grasscutter might be an induced ovulator like the rabbit (10). Although the photomicrography of the slides revealed an array of epithelia cells, there were no consistent pattern within the treatments. For example, in Figure 1 and 2, two animals (2T1 and 3T1) in the same treatment group (FPC) presented different vagina exfoliative cellular patterns on the same day.

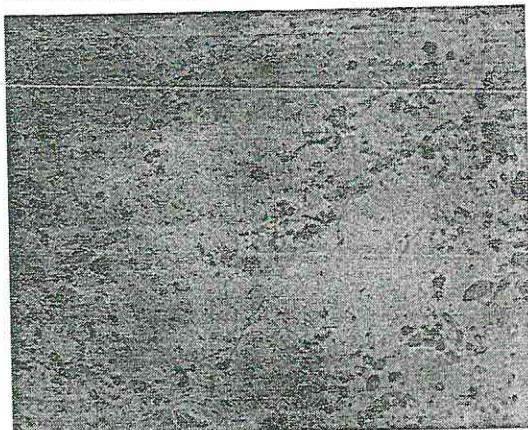


Fig 1: slide showing few intermediate (I), parabasal (P) and leucocytes (L) from vagina smear of animal 2T1. Magnification: x1600

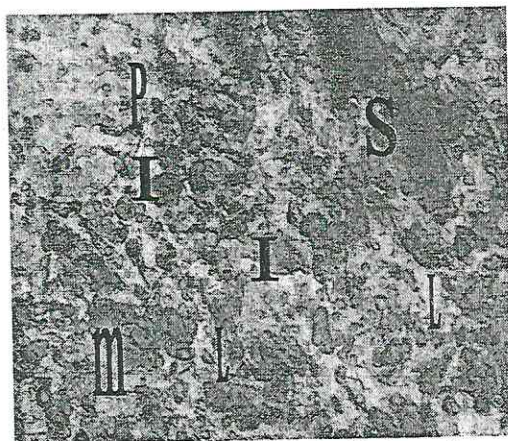


Fig 2: slide showing a mixture of intermediate, parabasal (P), superficial(S) and metoestrus (m) cells and leucocytes (L) from vaginal smear of animal 3T1. Magnification: x1600

Conclusion

The vaginal lumen epithelial cell types of the female Grasscutter includes parabasal, intermediate, superficial and metoestrus. Male presence has no influence on the occurrence of the epithelia cells in the female grasscutter. These findings suggest that the grasscutter could be an induced ovulator like the rabbit.

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