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The effect of Vaginal Ph on Ewes' Fertility

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Abstract. Arabi ewes were used to determine the extent of the effect of the pH of the vaginal mucus on the fertility rate, vaginal sponges enriched with the progesterone hormone were used and the vaginas of the ewes were washed with different pH solutions. The fertility rate was 69.5%. There was no significant effect of the vaginal pH on this characteristic, and a positive correlation coefficient (0.821) was found between the two characteristics

Highlights:

1. Arabi ewes studied for vaginal mucus pH effect on fertility.
2. Progesterone-enriched sponges, pH solutions used; fertility rate 69.5%.
3. No significant effect, but strong positive correlation (0.821) found.

Keywords: ewes, fertility, pH, buffers, phosphate

Introduction

Sheep are considered domesticated animals and their reproduction is seasonal. The spring is the breeding season, but they can reproduce throughout the year. Their abundance is considered of commercial importance for domesticated sheep. The sheep herd needs one feral ram. He establishes dominance through physical competitions with other rams [1]. An ewe produces multiple lambs. Increasing the number of twins at birth or increasing the size of births requires attention and ensuring reproductive care [2] Ewes have an estrus cycle approximately every 17 times, which lasts for approximately 30 hours. Signs of the cycle appear, including physical signs and the emission of perfumes. Where you smell the urine of an ewe in estrus. This ram is prepared by extending its neck and curling its lip [3]. The pregnancy period is five months. The behavior of ewes changes shortly before giving birth. As the ewe's udder emerges quickly, her vulva will swell [4].

Fertility is affected by its active ingredients in addition to health factors. One of the most common causes of low pregnancy rates in the herd is due to deficiencies in minerals and vitamins. Especially selenium, copper, and vitamins A and D. Likewise, diseases that cause the mother to miscarry, or foods found in feed [5, 6].

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Methods

This study included 49 Orabi ewes, selected from within the flock of ewes. The selection was based on the similarity of ages (2-3) years and weights (25-35) kg. The ewes were randomly divided into seven experimental groups, seven ewes for one experimental group. Colors and numbers were used to distinguish the groups from each other. Before starting the experiment, the ewes were dosed against liver worms, and the ewes were dipped in a diazinon solution to eliminate external parasites. Veterinary care continued until the end of the experiment. The process of standardizing estrus was carried out for all ewes using vaginal sponges that were made in the form of cylinders with a diameter of 3 cm and a height of 3 cm, attached with a thin cotton thread 15 cm long and saturated with 50 mg of the hormone hydroxy progesterone caproate, produced by the Australian company Randwich Veterinary Laboratories, for each vaginal sponge (Karim 1983). The sponges were implanted in the vaginas of the ewes using medical forceps and leaving part of the thread outside the genital opening for the purpose of withdrawing the sponges after the end of the period of consolidation of estrus.

After (15) days from the date of insertion of the vaginal sponges, the sponges were removed and the vaginas were washed with phosphate buffer solutions (0.2 M) with different concentrations which are (6.3, 06.5, 6.7, 7, 7.3, 7.5, 7.7) for the seven experimental groups, respectively. Three Arabi rams were used to fertilize the experimental ewes. They were released simultaneously with washing the vaginas. The ewes that returned to the estrus cycle were isolated, their vaginas were washed again, and they fertilized again. When the birth season began, the following data, the number of calving ewes, the number of non-calving ewes, and the sex of the newborn was taken.

Results and Discussion

Table (1) shows a large difference in the percentage of fertility between the experimental groups used in the study, The highest fertility rate (89.5%) appeared in the fourth and sixth groups, which washed their vaginas with phosphate buffer solution with a neutral and basic pH, respectively. While the sperm that were ejaculated into the vaginas of the ewes of the seventh group whose vaginas were washed with phosphate buffer solution (pH value of 7.7) failed to fertilize the egg and cause fertilization.

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Therefore, this group failed to produce births, which led to its statistical cancellation. Despite this procedure, no significant differences were observed indicating the effect of the vaginal pH on the fertility rate for the remaining six treatments in the study. It can be concluded that a vagina with a basal circumference of more than (7.5) may lead to immobilization of sperm after they are ejaculated into the vagina and before they reach the cervix. Hence the importance of artificial insemination for such ewes to deposit sperm in a circumference appropriate to their vitality.

Table (1) The effect of vaginal pH on fertility

vaginal pH	fertilized ewe	ewe birth	Mean + SE
6.3	7	4	55.6 +20
6.5	7	4	55.6 + 20
6.7	7	4	55.6 + 20
7	7	6	89.5 + 12
7.3	7	5	71.5 + 14
7.5	7	6	89.5 + 13
Total	42	29	69.5

Table No. (1) provides a clear picture of the positive correlation (0.821) between the vaginal pH value and the fertility percentage, as it is noted that the ewes of the acidic group had a low fertility percentage compared to the ewes of the neutral and basic groups, and despite the absence of significant differences that can be relied upon in formulating a final conclusion that gives a kind of confidence and scientific logic to prove the effect of the pH on the fertility percentage. We suggest that intravaginal spongy recognized estrus and induce fertility. Study of Wilds 2000 observed that ewes enter estrus within 24-48 hours of receiving an equine chorionic gonadotropin (ECG) injection, generally following the removal of the intravaginal apparatus [7].

Manes et al., [8] stated that the vaginal pH increased to 7.97 in ewes that showed signs of estrus following FGA treatment. other studies showed that the use of vaginal apparatus in ewes caused increases the pH level and e fertility rate will decreased, because excessive alkalinity negatively affected spermatozoa viability and the fertility rate was higher at pH levels below 7.0, additionally studies reported that the optimal

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vaginal pH level should be between 7.0-8.5 to protect sperm viability and mobility in the ewe [9]. duration of the vaginal sponge remaining in the vagina did not reveal statistically significant difference [10].

Conclusion

The present study concludes that the fertility rate was 69.5%. There was no significant effect of the vaginal pH on this characteristic, and a positive correlation coefficient (0.821) was found between the two characteristics

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