Commentary

iMedPub Journals
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Journal of Animal Research and Nutrition

2022
Vol.7 No.5:022

Unconventional Characterization of Animal DNA Viromes

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Received date: April 11, 2022, Manuscript No. IPJAM-22-13986; **Editor assigned date:** April 13, 2022, PreQC No. IPJAM-22-13986 (PQ); **Reviewed date:** April 24, 2022, QC No. IPJAM-22-13986; **Revised date:** May 04, 2022, Manuscript No. IPJAM-22-13986 (R); **Published date:** May 21, 2022, DOI: 10.36648/2572-5459.7.5.022

Citation: Dwyer M (2022) Unconventional Characterization of Animal DNA Viromes. J Anim Res Nutr Vol. 7 No.5: 022

Description

According to the Ministry of Agriculture and Land Reclamation (2015), Egypt has about 5463169 sheep, which are mostly utilized for lamb and mutton production. In Egypt, efforts have been made to improve the efficiency of native sheep breeds form eat and milk production, skin, and organic fertilizer by increasing reproductive rates (Galal et al., 2005). However, nutritional and/or hormonal therapies can increase the efficiency of most sheep production systems. Because ARG is a precursor to nitric oxide (NO), it has the potential to influence ovarian function. Also, NO has been found in the follicular fluid of several animal species. The presence of an intraovarian NO-generating system (for example, resident ovarian macrophages) supports the presence of an intra-ovarian NO-generating system, emphasizing its crucial role in modulating follicular growth. The administration of eCG at the end of the progestagensprotocols increases follicular growth. The follicle on the other side accumulates many layers of granulosa cells as it matures, allowing it to make estradiol-17 (Oktem et al., 2008) and the indications of estrus developed sooner and became more apparent and prolonged. Ovarian ultrasonography becomes a useful technique in detecting the advancement of antral follicular dynamics, ovulation, and corpus luteum (CL) production.

Animals and Managements

The current study was carried out at the experimental farm, Faculty of Agriculture, Al-Azhar University, Assuit, Egypt. The ewes were housed in open barns with sheds during the experimental periods. The animals were clinically healthy, free from reproductive disorders and fed the farm ration (14 % protein), water, and a mineral supplement were available ad libitum A total of 36 ewes were divided into three groups, each with 12ewes; group 1 control group, group 2 (eCG) animals were given vaginal sponges impregnated with 40 mg.medroxyprogesterone-acetate (MAP, Pfizer produced, NV/SA, Puurs, Belgium) for 14 days and injected with 400IUeCG, I/M, equine chorionic gonadotropin (freeze-dried serum gonadotrophin 500IU, gonaser, Hipra, Girona) at the time of sponge removal, and group 3:(ARG): animals were given 40mg MAP for 14 days, during this time; the animals were given 25gm rumen-protected Arginine.

Using a real-time, B-mode diagnostic scanner with a trans-rectal 5/7.5 MHz linear array transducer, ewes ovarian structures were monitored ultrasonographically. From the 15th to the 17th day of the estrous cycle, ultrasound tests were done once a day. Images were frozen on the ultrasound scanner's monitor, and the diameters of these structures were measured at their maximum with the ultrasound device's integrated caliper. All follicles with a diameter of ≤ 2 mm and CL were measured and mapped individually for ewes. When a tracked large, developing antral follicle was no longer visible, it was considered ovulation. The following ovarian characteristics were measured and compared among groups: Ovulation rates after the vaginal sponge's removal; Number and diameter of small follicle (diameter = 2-3mm) and large follicle (diameter ≤3) of the ovulatory follicles; Number and diameter of the CL; and Cross section in uterus.

Blood sampling

Blood samples were collected by venipuncture from the jugular vein into collection non-heparinized tubes and centrifuged at 4000 r.p.m for 15 minutes, and then serum was harvested and stored at -20C° till assay. The blood samples were collected during 24, 48 and 72 hours after intra vaginal sponge's removal and during 2nd, 3rd and 4st month's pregnancy. Plasma glucose and urea were determined according to Caraway and Watts (1987) using assay kits supplied by Diamond Chemical Company, Germany. Plasma AST and ALT were determined according to Young (1990) using assay kits supplied by Spectrum Chemical Company, Egypt.

However, there were significant differences in the plasma glucose concentration among eCG, ARG and control groups during the second and third months of pregnancy. It is possible, that plasma glucagon responses to arginine may be representative of pancreatic alpha cell responses to amino acids in general (Davies-Morel and Beck. 2003). Moreover, higher glucose concentrations during estrus in ewe have resulted in an increased rate of lipolysis and reduced glucose utilization.

Ultrasonic appearance of the ovaries and uterus: There were no statistical differences in the number of follicular categories on the right ovary at the end of the first day of therapy. The diameter of the largefollicles (mm) were larger. The current findings are consistent with the previous findings of Duggavathi

et al. (2003) who found that the follicular diameter increased to approximately 1 to 2 mm before ovulation and that follicles emerge every 3–5 days from a constant pool of 2 to 3 mm in mature ewes. Furthermore, Tassell and Kennedy (1980) observed that ewe's ovarian follicles grow in size in response to an exogenous gonadotropin stimulus. Nutritional direct activities at the ovarian level could be another route for the immediate nutritional effect on follicle formation. According to previous study by Ying et al. (2013) indicated that sheep ovarian follicles development was altered by high- and low-intake during the luteal phase for six days. This was accompanied by changes in the intra-follicular microenvironment as well as changes in the reproductive hormone, urea, and fat concentrations in the blood. In the same line, follicular atresia can be prevented by giving antral follicles enough GNRH exposure especially when gonadotropins injected after the progestagens treatment cause stimulates follicular development and improve the ovulation rate in small ruminants.