Long-term effect of beta-carotene on reproductive performance in Farafra ewe lambs

Anas A. Salem1 Nada A. ElShahawy2 and Haidar M.

Abstract:

Abstract Beta-carotene (precursor of vitamin A) is required not only for maintaining vital tissues in the reproductive tract but also for keeping the body in good health. Although green forages are the major source of carotenoids including beta-carotene (BC), but they are not available throughout the year. Therefore, the aim of this study is to figure out the long-term effect of BC synthesized chemically on live body weight (LBW), age at puberty, estrous cycle (EC) length and progesterone (P4) and estradiol -17 β (E2) profiles during pre and post-puberty in Farafra ewe lambs. 48 ewe lambs with mean body weight 13.25 ± 0.43 kg were divided into two equal groups (24 per each), the first group was injected i.m. with arachis oil (peanut oil) and considered control for the other treated group, the second group was injected i.m. 0.1 mg/kg by BC loaded on arachis oil 2 times a week for 4 months starting from weaning period to age at puberty. Beside detection of estrus by a ram, P4 value was taken as a marker in determining age at puberty. All ewe lambs were fed maintenance ration and housed in semi-open pens under Upper-Egypt environment conditions, El-Minia Governorate. Blood samples (10 ml/animal) were withdrawn from 6 animals per each group (control and treatment) by jugular vein puncture into tubes without anticoagulant. After clotting blood samples were centrifuged at 3,000×g for 10 min to separate the sera, which were stored at −20°C until P4 and E2 assay. Statistical analysis showed that LBW was significantly higher in the treated animals than the controls. BC did not significantly affect age at puberty and level of P4 during post-puberty, but it influenced significantly on E2 concentration at puberty and post-puberty. All animals exhibited their first short EC (puberty) with average of 6.20 ± 1.74 days (treatment) and 7.40 ± 1.97 days (control). The percentage of short EC observed during 69 days post-puberty was significantly (p 1.0 ng/ml in the two groups. The long-term BC injections did not advance the age at puberty in Farafra ewes, and did not increase the levels of P4 pre or post-puberty. Otherwise, BC had a significant positive effect on E2 levels during puberty and post-puberty (a day 28) in Farafra ewe lambs. However, increasing E2 concentration by BC may open other study in investigating the role of BC on estrous induction out of breeding season.

Keywords:

Puberty, Estrus, Progesterone, E2, BC and Farafra ewe lambs.

Published In:

the Egyptian Society for Animal Reproduction and Fertility , 2-6 February , NULL