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Effect of a Single Injection of hCG on Testosterone Concentration in Male Alpacas

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Abstract : In alpaca, age at puberty is variable and the factors regulating the pattern of puberty and sexual maturation are a subject of controversy. Plasma testosterone level is often used as an indicator of sexual maturity. Our hypothesis is that hCG treatment will cause an increase in testosterone level that is correlated with animal age. The specific aim was to investigate the testicular tissue response to a single hCG injection by monitoring the serum testosterone concentration. Eighty four (n=84) males ranging in age from 6 to 60 months were used. Alpacas were grouped based on their ages into 15 groups. Each group had three to five male animals. Blood samples were collected from the jugular vein before treatment with hCG and 2 hours after intravenous administration of 3000 IU of hCG (Chorulon®). The serum was harvested and stored at -20ºC until the analysis. The effect of age on basal testosterone level and response to hCG treatment was evaluated by Analysis of Variance. As a result, basal serum testosterone concentrations were very low (<0.1ng/ml) until 9 months of age. Although basal serum testosterone concentrations increased steadily with age there was a significant variation amongst males within the same age group. Administration of 3000 IU of hCG, resulted in an average increase of 50% ($P<0.05$) in serum testosterone concentration after 2 hours. The percentage increase in serum testosterone in response to hCG stimulation varied from 51 to 81%. There was no correlation between the degree of response and age. However, the response to hCG injection presented two modes of increase depending on the age of animals. The first mode occurred at ages 9 to 14 months and the second mode was observed between 22 and 36 months. In conclusion, our results suggest that testicular growth and sensitivity to LH stimulation may be bimodal in the male alpaca with a rapid increase in growth and sensitivity between 9 and 14 months of age and a second phase of increased responsiveness after 21 months of ages.

Keywords : alpaca, testosterone, hCG, animal science
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