

TESTOSTERONE RESPONSE IN MALE ALPACAS (*LAMA PACOS*) FOLLOWING hCG ADMINISTRATION AND CORRELATION WITH TESTICULAR WEIGHT

Cheryl L. Fite¹, Ahmed Tibary^{1,2}, Jerry J. Reeves^{2,3}, David M. de Avila^{2,3}

¹Department Veterinary Clinical Sciences, College of Veterinary Medicine, Washington State University, Pullman, WA 99164-7060, USA, ²Center for Reproductive Biology, Washington State University, Pullman, WA 99164-7060, USA, ³Department of Animal Sciences, Washington State University, Pullman, WA 99164-7060, USA

The objective of this study was to characterize the effect of administration of human chorionic gonadotropin (hCG) on testosterone secretion male alpacas (*Lamas pacos*) and to determine correlation with testicular weight. Twenty-four males in two age groups (2–3 years, $n = 69$) and (4–7 years, $n = 6$ 15) were used in the experiment. All males were normal with respect to testicular palpation and ultrasonography. Each male received an intravenous injection of 3000 IU hCG (Chorulon[®], Intervet, Holland) 36–48 h before scheduled routine castration. Blood samples were taken from each male, via intravenous jugular catheter, to determine testosterone concentrations before (T0), 1 h (T1), 2 h (T2), 8 h (T8) and 24 h (T24) after administration of hCG. Serum testosterone concentrations were measured using a double antibody radioimmunoassay (DSL-4100) (Diagnostic System Laboratories, Inc., Webster, TX). The assay sensitivity was 0.1 ng/ml; intra-assay CV was 2.4%, inter-assay CV was 8.5%. All the samples from each animal were tested within one assay. After castration, testes were dissected free of epididymi and weighed individually. The response to hCG stimulation was determined by repeated measurement ANOVA for each age group and for all males. Correlation between testosterone concentrations and total testicular weight were established using a linear regression model. Basal concentrations of serum testosterone ($T0 = 1.3 \pm 0.2$ ng/ml) were variable and differed significantly ($P < 0.01$) between age groups. Serum testosterone concentrations increased over time and doubled 2 h after injection ($T2 = 2.3 \pm 0.2$ ng/ml). The highest level (250–300% increase from T0) was observed at 8 h ($T8 = 3.5 \pm 0.3$ ng/ml) followed by a slight decrease at 24 h post-hCG ($T24 = 3.3 \pm 0.4$ ng/ml). Comparison of mean testosterone at different times showed that T8 is significantly different from basal levels in all animals. There was a significant ($P < 0.01$) animal $\times$ testosterone response interaction. A significant correlation ($P < 0.01$; $r = 0.64$) was found between serum testosterone concentration and total testicular weight. Correlation between basal testosterone concentration (T0) and testicular weight was only significant in young animals. In conclusion, these preliminary results show that administration of 3000 IU of hCG IV can be used reliably to detect testicular tissue. The interaction between response to the test and testicular weight is age dependent in normal males. Further characterization of this response in different age groups and in males with various testicular abnormalities is being conducted.

Keywords: Alpaca; hCG; Testis weight; Testosterone; Endocrinology