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Thyroid hormones and hematological profiles of goats in contrasting agroecology: Indicators of physiological adaptation

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Abstract

The hematological parameters and thyroid hormones have vital roles in monitoring and evaluating the health, nutritional, adaptation, and physiological status of animals. Normal thyroid gland function and hematology profiles are essential to sustain productivity. The study was conducted to examine the hematological and thyroid hormones of indigenous goats reared in three agroecological zones. Blood samples were collected from a total of 184 adult goats of both sexes from the jugular vein, using tubes with and without anticoagulant. The blood samples were collected in two seasons, viz., wet and dry. Hematology parameters were analysed from the blood collected in an anticoagulant-containing tube, while thyroid hormones (T3 and T4) were estimated from anticoagulant-free serum. Agroecological zone, season, and sex showed a significant ($p < 0.05$) effect on hematology parameters, while the effect of season was not significant ($p > 0.05$) for thyroid hormone concentration. The highland goats displayed higher values for LYMP, RBC, Hb, and RDW-CV, while the lowland goats exhibited larger values for WBC. The WBC, NEU, MON, EOS, RBC, Hb, HCT, MCV, and MCHC were significantly ($p < 0.05$) higher in the wet season. The RBC and HCT were higher in female goats, while the RDW-CV was higher in male goats. The female goats had higher concentrations of T3 and T4 than males. The highest concentrations of T3 ($1.80\,\mathrm{ng\,mL^{-1}}$) and T4 ($8.33\ \mu\mathrm{g\,dL^{-1}}$) were found in highland goats. The deviation of some hematology parameters from the normal range is due to the extensive management system. Thus, to validate the nutritional, health, and adaptive status of the goat, further research with more frequent blood data and complemented physiology is required.

Keywords: Adaptation, agroecological zone, hematology, thyroid hormones

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