THE NORMAL ELECTROCARDIOGRAM IN THE CLINICALLY HEALTHY SAANEN GOATS
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Introduction: Electrocardiography (ECG) is a noninvasive, inexpensive technique that yields useful information regarding arrhythmias classification, diagnosing conduction abnormalities and it is also a valuable aid in prognostic and therapeutic considerations.

Most of the literature are related to dogs and horses and the ECG has been rarely applied in caprine medicine.

Objective: To establish normal reference ECG values in Saanen goats.

Material and methods: A total of 19 female Saanen goats, non-pregnant, weighing between 30-63kg, aged between 1-5 years, free of cardiac murmurs were selected.

The ECG recordings were made on right lateral recumbent position using single channel electrocardiograph with a 50mm/s paper speed and calibrated 10mm/mV.

Mean, standard deviation and the reference range (95% confidence interval) were calculated for: heart rate (HR), the amplitude and duration of P, Q, R, S and T waveforms, PR and QT intervals, QRS complex, and ST segment for standard limb lead II.

Results and discussion: The HR was 129.42±21.55bpm and ranged between 94-154bpm. Sinus arrhythmia was present in 10.53%, a related common characteristic as a respiration-heart rate response.

QRS complexes founded: qR (47.36%), QR (21.05%), rS (21.05%), R (5.26%) and qRs (5.26%). This variability might be due to the differences in the topographic anatomy of the heart, position of heart in relation to the limbs and mechanism of ventricles activation. Therefore, the characterization of the QRS pattern in the ECG for goats would be meaningless.

The overall P, Q, R, S and T durations (s) were 0.03±0.01, 0.02±0.005, 0.03±0.014, 0.03±0.011, 0.06±0.014, respectively. The reference values were 0.01-0.04, 0.01-0.02, 0.01-0.06, 0.02-0.04 and 0.04-0.08, respectively. The amplitudes (mV) of these waveforms were 0.1±0.031, 0.06±0.023, 0.44±0.312, 0.39±0.434, 0.26±0.164 (T -) and 0.15±0.071 (T +), respectively. The reference values were 0.05-0.15, 0.05-0.1, 0.05-1.1, 0.05-1.1 and -0.2-0.7, respectively.

The PR, QT, QRS and the ST durations (s) were 0.08±0.018, 0.26±0.03, 0.05±0.008, 0.15±0.041, respectively. The reference values were 0.06-0.12, 0.2-0.32, 0.04-0.07, and 0.11-0.26, respectively.

Conclusions: Some values for the ECG differ from that of other breeds previously reported.

Further studies are necessary to establish reference values in order to allow comparisons among different breeds and to detect and diagnose heart arrhythmias and for therapeutic development in goats.

Keywords: Goat. Saanen. ECG.