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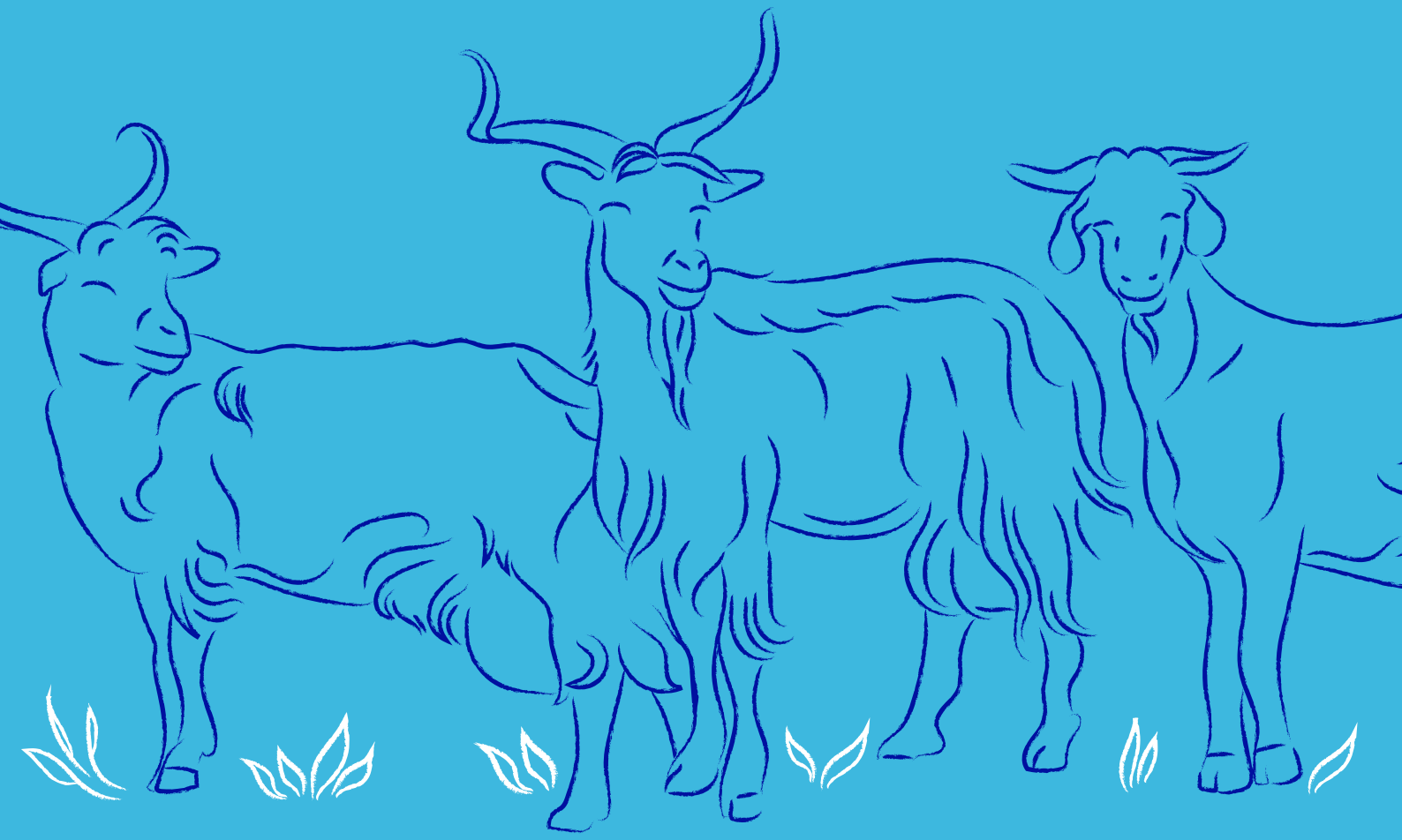

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Evaluating the Suitability of Subcutaneous Loggers for Measuring Temperature, Activity, and Heart Rate Variability in Dairy Goats. Preliminary results

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Key words: Goat welfare, subcutaneous logger, heart rate variability, physiological monitoring, dairy goats, Star-Oddi®, animal behaviour.

Animal welfare assessment is a critical concern in livestock production, yet existing methodologies are often time-consuming, insufficiently informative, or poorly adapted for goats. This preliminary study evaluates the suitability of a subcutaneous logger (Star-Oddi®) for continuous monitoring of physiological and behavioural parameters in dairy goats. A logger was implanted subcutaneously in a Majorera dairy goat and programmed to record subcutaneous temperature (ST), activity, and heart rate variability (HRV) at 15-minute intervals over three days. Electrocardiograms were performed before implantation and prior to extraction for validation. ST stabilized 24 hours post-implantation, with a mean ± SD of 27.54 ± 1.69 °C, exhibiting a circadian rhythm. Activity levels averaged 20.75 ± 30.13 mg, with peaks at 08:00 (milking, 100-150 mg) and 12:00 (feeding, 100-127 mg). Mean HR after stabilization was 74.50 ± 15.07 bpm. HRV analysis showed SDNN (Standard Deviation of NN intervals) of 120.66 ± 77.58 ms and RMSSD (Root Mean Square of Successive Differences) of 177.01 ± 112.64 ms. These findings suggest that subcutaneous loggers are a viable tool for welfare monitoring in dairy goats, enabling real-time physiological and behavioural assessments with minimal intervention. Further research should validate its long-term applicability across different management conditions. Funded by Fundación CajaCanarias and Fundación Bancaria La Caixa (Ref. 2023DIG29).