



A186 Physiology of Reproduction in Male and Semen Technology

### **Correlations between testicular surface temperatures measured by infrared thermography and seminal parameters in rams of distinct genotypic groups**

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The aim of this study was to correlate the testicular surface temperature with rectal temperature and semen quality in rams of different genotypic groups. The experiment was conducted at Embrapa Pecuária Sudeste, São Carlos-SP, where the climate is characterized by Köppen as Cwa type. The experiment was conducted from October/2015 to February/2016. Twenty rams (20.1 months; 67.6 kg) of four genotypes were used as semen donors: Morada Nova (n = 5), Santa Inês (n = 5), Dorper (n = 5) and Texel (n = 5). The animals were kept in confinement in a 570 m<sup>2</sup> barn partly covered by a roof of 196 m<sup>2</sup>. Every thirty days in the morning, it was held thermography infrared of scrotal region (T300, FLIR® Systems, Wilsonville, USA). Simultaneously, the rectal temperature was being measured (RT, °C). The thermograms were analyzed using FLIR® Tools Plus 3.1 software and average testicular temperature (ATT, °C) and temperatures of the dorsal pole (DPT, °C) and ventral pole (VPT, °C) of the testicles were determined. Based on the difference between DPT and VPT, it was calculated testicular temperature gradient (TTG, °C). Semen samples were collected monthly by artificial vagina. We evaluated the progressive motility (%), gross motility (0-5), sperm count (x10<sup>9</sup> sperm/mL), major sperm defects (%), minor sperm defects (%), total defects (%) and DNA fragmentation index (%). Data were analyzed for normality by Lilliefors test. Correlations were calculated by Pearson correlation test, first based on the overall data set and then grounding the data by genotype. The data were evaluated in BioEstat 5.0 program with significance level of 5%. The ATT showed a positive and significant correlation with minor sperm defects (0.68; P < 0.05) and total defects (0.57; P < 0.05) in Dorper animals. The TTG was positively correlated with rectal temperature (0.36; P < 0.05), being higher in Santa Ines animals (0.69; P < 0.05). In Morada Nova breed, TTG was positively correlated with mass motion (0.76; P < 0.05). In rams of Texel breed, TTG was correlated with sperm count (0.65; P < 0.05). These results demonstrate individuality in testicular thermoregulation of each genotypic group and its response as for the seminal quality, which has lower degree of effect in animals considered naturalized. It strengthens the hypothesis that abnormal testicular temperature can negatively affect semen quality, especially in exotic breeds animals. The gradient increase, which stands for larger temperature difference between testicular poles, presented with positive results for semen, highlighting the importance of their use within the complementary breeding soundness evaluation. In addition, this study reinforces the contribution of the infrared thermography use in reproductive evaluation of males.