

## TRANSEPIDERMAL WATER LOSS IN EWES SUBMITTED TO SUN EXPOSURE

### PERDA DE ÁGUA TRANSEPIDÉRMICA EM OVELHAS SUBMETIDAS À EXPOSIÇÃO AO SOL

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The work aims to determine thermolysis capacity by losses by sweating using trans epidermal water loss values (TEWL) and by tachypnea. Fifty six Santa Ines ewes were divided in facilities having covered area with a cement floor and fiber cement roof panels (4 m high, 8 x 10 m) and uncovered area with hard dirt floor (15 x 15 m). Thermolysis capacity was evaluated using heat stress challenge in three consecutive days, in which animals stayed under the shade, from 08:00 to 13:00 h, when the first sample was taken (T0: 08:00 h). From 13:00 to 14:00 h, they stayed in sunny place for 1 h, and the second sample was taken (T1: 14:00h). Then, animals went back to the shade, where they stayed for more 45 minutes (14:00–14:45 h), and the third sample was taken (T2: 14:45h). TEWL with a VapoMeter (Delfin, Finland), respiratory rate (RR) by count of movements per minute and rectal temperature (RT) with a digital thermometer were collected in all sampling times. During the heat challenge, air temperature and relative humidity were measured under the shade and in the sun (Table 1). Variance analysis with multiple comparisons of means by Tukey test at 5% was performed. The study was approved by Ethics Committee of USP (12.1.755.74.9). The highest values of TEWL, RR and RT were found shortly after 1 hour of sunshine ( $P < 0.05$ , Table 2). Despite TEWL and RR decreased after 45 minutes under the shade, RT did not decrease significantly during this period. This can be explained by the lower thermal inertia for body heat loss, with 17.4% decrease in RR and 0.21% in RT. TEWL can be used to evaluate thermolysis capacity of ewes in addition to RR.

Table 1. Least square means for air temperature (Temp.) and relative humidity (RH) under the shade and in the sun

	Basal (08:00 h)	After 1h in the sun (14:00 h)	After 45 minutes under the shade (14:45h)
Temp. - shade (°C)	25.6	30.6	31.9
Temp. - sun (°C)	27.6	31.7	32.4
RH - shade (%)	68	52	46
RH - sun (%)	65	48	50

Table 2. Least square means and standard error for trans epidermal water loss (TEWL), respiratory rate (RR) and rectal temperature (RT) on ewes exposed to thermal stress

	Basal (08:00 h)	After 1h in the sun (14:00 h)	After 45 minutes under the shade (14:45h)
TEWL (g/m <sup>2</sup> /h)	141.93 ± 8.95 c	525.26 ± 41.69 a	333.60 ± 21.12 b
RR (moviments/min)	34.1 ± 2.77 c	102.1 ± 4.22 a	84.4 ± 4.50 b
RT (°C)	38.01 ± 0.077 b	39.23 ± 0.069 a	39.15 ± 0.048 a

Means followed by different letters in the same line are different by Tukey test ( $P < 0.05$ ).

Keywords: sheep, thermolysis capacity, VapoMeter.

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