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Vacuum level for opening the teat sphincter and the change in the teat end wall thickness in response to the machine milking of indigenous Greek goats

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The aim of this paper was to study some of the teat characteristics involved in the milking ability of indigenous Greek goats such as the vacuum level of the milking machine that is required for the opening of the teat canal sphincter and the changes in the teat end wall thickness induced by milking. Thirty-six dams (12 of the first, 12 of the second and 12 of the third and subsequent lactations) were used after weaning (60 ± 5 days). Dams were milked twice a day (8:00 and 18:00 h) for 12 weeks in a milking parlour 1 × 12 side by side of Casse type with 6 milking units and a low milk line and air pipeline. The main functional characteristics of milking machine were: vacuum level 44 kPa, pulsation rate 90 pulsations/min and pulsation ratio 50:50. Every 14 days, during morning and evening milking the vacuum level that was required for the opening of the teat sphincter (VOTS) was measured. The measurement of teat end wall thickness (TEWT) was performed before and after milking. The results of this study showed that during the experimental period the mean VOTS was 23.57 ± 0.36 kPa and decreased significantly as the stage of lactation progressed ($P < 0.001$). The post-milking TEWT was 3.55% higher in comparison with that before milking ($P < 0.01$). A continuous and significant decrease in teat thickness was observed during the lactation stage ($P < 0.001$), which suggests a reaction to intramammary pressure and milk quantity in the udder. The TEWT was affected significantly by the parity ($P < 0.01$). A positive correlation was found between VOTS and TEWT before and after milking (0.4 and 0.36, respectively). It could be said that a lower vacuum level is required for the opening of the teat sphincter of the udder in goats of the indigenous Greek breed. The thicker teat end wall and more resistant sphincter could be less favourable in the machine milking of goats.

Keywords:

goat; machine milking; vacuum level; teat thickness; teat sphincter

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