BIOMETRIC PARAMETERS AND PIXEL DISTRIBUTION ANALYSIS OF B-MODE TESTICULAR ULTRASONOGRAM IN YOUNG AND SEXUALLY MATURE RAMS (PRELIMINARY STUDY)

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Summary
This study aimed to test the relationships between basic biometric parameters and pixel distribution of predetermined region of B-mode testicular ultrasonogram in young and sexually mature rams. The animals were separated in two groups: group I (young rams, aged 5-8 months; n=6) and group II (sexually mature rams, aged 14-18 months; n=6). Biometric parameters as age, body weight and scrotal circumference were determined by the routine methods. A trans-scrotal ultrasonography of both testes was performed with 7 MHz linear transrectal probe by the same operator, as the values for focus, gain and brightness were kept constant during the study. The ultrasound images were obtained in a longitudinal view plane and frozen when visualization of the testicular mediastinum was clear and apparent. All images were transferred to a computer, followed by their converting in a gray-scale (0-255 pixels) and submission to pixel distribution analysis using of Image ProPlus 7.0 analytical software and option range statistics. The pixel distribution in the same region for left and right testis was based on the pixel ranges classification for different biological tissues - blood (0-16), lipids (17-37), muscle (38-83), fibrous (84-160) and calcium (161-255) and expressed as colour area in percentages (Pazinato et al., 2016). The mean between the values for left and right testis was accepted as a final value for each ram. The data for both groups were statistically processed, compared and the relationships between the biometric parameters and different pixel ranges were determined. Significant differences (P<0.05) among the groups were recorded for all biometric parameters and the lipid area only. The biometric parameters correlated positively (R≥ 0.92; P<0.05) each other, while their relationship (R< - 0.94; P<0.05) with the lipid area and the correlation between muscle and fibrous area were negative (R = - 0.92; P<0.05). In conclusion, a computer assisted analysis of the pixel distribution of B-mode testicular ultrasonogram can be a useful tool in breeding soundness evaluation of rams. Nevertheless, future investigations with a large number of animal are needed. They should be focused on standardization of the pixel ranges according to the specificity of the testicular tissues in rams and determination of the relationships between pixel distribution in different regions of the ultrasonogram, biometric parameters and semen characteristics.

Key words: ram, biometry, testes, pixel distribution analysis