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Histological mammary gland evaluation: comparison of three methods

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9 goats, at mid in their third lactation, were used to histological mammary gland evaluation. The evaluation was done using three methods at different magnifications (20x, 5x and 40x, for method 1, 2 and 3, respectively) to determinate the histological components proportion (secretory, ductal, vascular and connective tissues). Two samples were randomly taken from each half udder, processed by hematoxylin-eosin staining and photographed for subsequent evaluation. All measurements were made by a digital image analysis program (Image-Pro Plus Version 4.5). The areas occupied by the secretory tissue, vascular tissue, ductal tissue and total tissue surface were determined for each image and for each method. The area occupied by connective tissue was calculated as the difference between the total area and other tissue surfaces. The results were expressed as total tissue percentages. An ANOVA procedure was performed using SAS, version 9.00. In method 1, the secretory tissue presented differences with the other two methods, probably because different percentage of connective tissues found for this method. Following this line of argument, differences between connective tissue percentages were detected in the three methods. However method 1 showed a higher connective tissue percentage, because at 20x magnifications it was possible to classify the interstitial tissue between the alveoli and the intra- and interlobular tissue. On the contrary, using method 2 it was only possible to detect the connective tissue placed in the intra- and interlobular space. In reference to the last method, the only connective tissue detected was the interstitial tissue between alveoli. Methods 2 and 3 take similar values of secretory and connective tissue percentages, although selection criteria were different. Vascular tissue percentage was similar in methods 1 and 2. Ductal tissue percentage was highly variable between samples, no detecting differences between methods 1 and 3 when this parameter was measured. In conclusion, method 1 take better values of connective tissue percentages because taking into account both intra-, interlobular and interstitial connective tissues; finding represented all four tissue types (secretory, connective, vascular and ductal tissues). And it is the recommendable method for the evaluation of the mammary gland development.