

## Summary

Cancers of the mammary gland in dogs are, after skin cancers, the most common cause of oncology consultation in small animal medicine. The basic diagnostic is a fine-needle biopsy of the pathologically changed mammary gland. The final diagnosis is based on histopathological examination according to WHO recommendations and guidelines. More than 50% of breast cancers are malignant. Changes of epithelial origin predominate. In addition to histological examination, the TNM classification is used to classify the clinical stage of the tumour. Due to the complexity of the oncogenesis process, standard histopathological examination and TNM classification may not be sufficient in assessing the prognosis. For this reason, pathologists, oncologists and clinicians are looking for new tools to diagnose and treat cancer. New cell markers whose expression changes with the development of the neoplastic process. Ki-67 mitotic activity is used to assess the proliferation of cancer cells. One of the new markers of potential value is SOX 10, its expression increases with the degree of clinical and histological advancement, and is associated with unfavorable prognosis. In human medicine, it is most often used to diagnose triple-negative breast cancer (TNBC) and to detect metastases in predilection sites - lymph nodes, lung tissue, brain. Another marker is the testin, the expression of this protein decreases with increasing tumor stage. The highest expression is observed in normal cells. The aim of the study was to try to determine the level of expression of these two proteins, the relationship between other markers of tumor proliferation such as HER2 and Ki-67. Analysis of SOX 10 and testin expression depending on clinical and pathological data, as well as analysis of SOX 10 at the mRNA level in selected fragments of changed mammary tissue. The obtained results were subjected to statistical analysis, assuming the significance level of  $p < 0.05$ . In my studies, I showed that SOX10 expression is present in normal tissue and in malignant lesions of the mammary gland in dogs. Its severity is clearly lower in the normal gland. The strongest color reaction was observed in simple tubular carcinoma and in mixed carcinomas. Association with SOX10 expression, unfavorable prognostic factors such as histological malignancy grade, Ki-67 proliferation index and vimentin expression were observed. In the case of testin, the strongest expression was observed in the normal mammary gland and in benign lesions. The intensity of the color reaction was significantly lower in malignant lesions, especially in mixed carcinomas, compared to other histological types and non-cancerous tissue. Based on the observed relationships, it can be concluded that further detailed studies on SOX10 and testin expression levels and correlations with long-term factors, i.e. overall survival, presence of distant metastases, disease-free survival time, will increase our

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knowledge about the role of the tested proteins in the course of the neoplastic process in dogs and may contribute to the development of new therapeutic methods and prolongation of survival in patients with mammary ridge tumours.

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