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GENETIC MARKERS FOR THE DETECTION OF CIRCULATING TUMOUR CELLS IN DOGS WITH METASTATIC MAMMARY TUMOURS

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Introduction: The diagnosis of canine mammary tumours is currently based on histological examination, but discrepancies between the diagnosis and prediction of distant metastasis exist. Detection of circulating tumour cells (CTC) has a proven predictive value for human breast cancer. The aim of this study was to indentify genetic markers for the detection of CTCs in the peripheral blood of female dogs with metastatic mammary carcinomas.

Materials and Methods: A total of 108 canine gene products were tested as potential markers of CTC using RT-PCR. Peripheral blood from healthy female dogs (n = 10), metastatic mammary carcinomas (n = 10) and two canine mammary carcinoma cell lines were tested for expression of these genes. Sensitivity of the marker gene assays was determined using serial dilutions of tumour cells made in peripheral blood from healthy dogs.

Results: Five candidate marker genes were identified that were present in metastatic carcinomas but not in blood from healthy dogs. Furthermore, RT-PCR assays were sensitive enough to detect up to one tumour cell in 107 peripheral blood leucocytes.

Conclusions: Several potential genetic markers for detection of CTC in dogs were identified. These will now be applied to blood samples from dogs with or without mammary tumours to correlate their presence with prognostic factors in the primary tumours and the course of the disease following long term clinical follow-up.

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