

**TITLE:** FUNGAL DETECTION AND ISOLATION FROM CANINE CANCER SAMPLES: PRELIMINARY RESULTS FOR A MYCOLOGICAL ETIOLOGY OF MALIGNANT TUMORS

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**ABSTRACT:**

Systemic fungal infections in cancer patients are recurrent and considered opportunistic. Since this condition is attributed to immunosuppression by the antitumor treatment and possible infections in nosocomial routine, it does not seem adequate for the clinical veterinary practices. After observing conidia in blood smears on preoperative exams of canine patients and performing mycological cultures from different types of cancer tissues excised from dogs that had been submitted to elective surgeries, it was observed that these culturable fungal colonies presented slow growth. These animals had not undergone previous chemotherapy treatment or hospitalization and did not present leukopenia in the preoperative examinations, and considering the biology of the fungi and their colonization until the formation of biofilm associated to the immunosuppressive substances metabolized by them, it was suggested the possibility that these infections were not opportunistic. The present work is a retrospective histopathological study aiming at a qualitative morphological evaluation of canine cancer tissues in order to investigate the occurrence of possible fungal components in the tumor microenvironment. The staining protocol adopted was developed in a previous experiment with culture of lung cancer cells and normal cells to demonstrate specific structures of fungi. Serial histological sections of samples from 50 canine malignant tumors and positive and negative controls for the presence of fungi were used. Standard staining by Hematoxylin-Eosin (HE) and Gram of histopathological samples were used in addition to the staining by nankin ink and Calcofluor White, a fluorophore commonly used to detect fungi. All the slides evaluated were photographed under microscope for archive of information. Morphological structures similar to fungi were detected in all canine cancer samples studied, suggesting that malignant tumor can be the potential focus of disseminated fungal infection in cancer patients. These results point out that fungi can be recurrently detected and isolated from the cancer microenvironment, and therefore may become selective targets for diagnosis, prognosis, tumor marking and antitumor therapy, in addition to contributing to a better understanding of the carcinogenesis.

**Keywords:** microbiome, cancer microenvironment, fungal infection, carcinogenesis

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