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MEETING ABSTRACT

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Myeloperoxidase alters tumor growth *in vitro* and *in vivo*

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Background: Despite the recent improvements in treatment, lung cancer remains the leading cause of cancer-related deaths worldwide. Non-small-cell lung cancer (NSCLC) is a heterogeneous disease and represents ~85% of all lung cancer cases. It has been reported that NSCLC tumors exhibit high immune-cell infiltration, including high neutrophil infiltration. Neutrophil-derived enzymes, such as myeloperoxidase (MPO), are considered to contribute to tumor development. MPO is a heme-containing peroxidase enzyme known for its host-defence function against microbes. Some reports suggest that MPO might be able to influence cancer cells and the tumor microenvironment and that way contribute to cancer development. We aim to investigate whether MPO can influence tumor growth *in vitro* and *in vivo*.
Methods: For this investigation we used, among others, the following methods: flow cytometry, fluorescence microscopy, western blotting, and BrdU, FITC annexin V/PI and wound-healing assays.
Results: *In vivo* data in our lab show that MPO knockout (KO) mice develop smaller tumors and have prolongated survival when compared to MPO wildtype (WT) mice. Analysis of the tumor microenvironment (TME) revealed an increased number of different T-cell populations as well as improved function of T cells in MPO KO *vs*. WT mice. Further, MPO increased proliferation of human lung adenocarcinoma A549 cells *in vitro*. Furthermore, MPO-treated cells revealed a decreased number of apoptotic cells, suggesting a protective function of MPO. Migration behaviour of cancer cells was not affected by MPO. Besides the cytoplasmic uptake of MPO, we report for the first time a nuclear internalization of MPO in A549 cells.
Discussion: Our data support the hypothesis that MPO plays a role in lung cancer development.
Keywords: lung cancer – myeloperoxidase – neutrophils

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