

Title: Impact of NF-κB inhibition via IKKε/TBK1 on proliferation and invasive capability of tumors *in vitro* and *in vivo*

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The transcription factor "Nuclear factor 'kappa-light-chain-enhancer' of activated B-cells" (NF-κB) has been linked to cell proliferation, apoptosis, cancer, inflammatory and autoimmune diseases and viral infections. Under normal conditions NF-κB is localized in the cytoplasm and sequestered by binding of the inhibitor of NF-κB (IκB). Upon stimulation, IκBs are phosphorylated by IκB kinases (IKK), and subsequently degraded. Thus, the nuclear translocation signal is unmasked and NF-κB is able to translocate into the nucleus and bind to the promotor region of various genes. One of these IKKs is the IKKε, which acts in a complex with TANK-binding kinase 1 (TBK1). The pharmaceutical component Amlexanox, which is used in our experiments, is able to inhibit this IKKε/TBK1 complex and therefore indirectly inhibits the activation of NF-κB. Our results show that IKKε is upregulated in malignant melanoma cells compared to melanocytes and that the inhibiton of IKKε with Amlexanox inhibits the proliferation, migration and invasion of malignant melanoma cells in a concentration dependent manner *in vitro*. Further experiments are planned where IKKε is knocked out via a CRISPR-Cas system to see the isolated effect of IKKε. Additionally, *in vivo* experiments are planned to inject malignant melanoma cells into nude mice and observe the tumor growth with and without Amlexanox treatment. On top of that human melanoma samples are investigated for their expression and localization of IKKε to see if similar patterns can be seen in patients.

Biography

Moritz Möller obtained his Bachelors degree in Biomedical Science at the Philipps University, Marburg, Germany. He then moved to Frankfurt to obtain his Masters degree in Interdisciplinary Neuroscience at the Goethe University, Frankfurt, Germany. Moritz worked on his Master thesis, with the title "The role of alpha-Synuclein in inflammatory and neuropathic nociception in mice", at the Institute of Clinical Pharmacology, Goethe University, Frankfurt, Germany, for which he then was awarded with the price for the best Masters degree in the year 2017/2018. He finished with the age of 24 and started working as a PhD student in the Institute of Clinical Pharmacology in 2017.

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