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Influence of hypoxia on signaling pathways upon treatment with CK2 inhibitors in selected human tumor cell lines

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CK2 is an antiapoptotic protein kinase which has been shown to be elevated in all so far investigated tumors. CK2 is a druggable kinase, mainly owing to its multiple involvement in various diseases. Several selective inhibitors have been described and characterized *in vitro* and partly in mammalian cell lines. Here, we report the efficiency of some of the known CK2 inhibitors under normoxia and hypoxia in selected human tumor cell lines.

We have focused on signaling molecules such as: HIF1α, acetyl--cocarboxylase, CK2 subunits, Pim1, Pim3, PI3K, AKT, AMPK, ERK, p38, JNK and characterized their expression and activation (phosphorylation status) under normoxia and hypoxia and in the presence and absence of various CK2--specific inhibitors. We also investigated the influence of the various parameters on cell death induction. Beside these experiments using immunoblot analyses from cellular lysates, kinase activity measurements were performed using synthetic peptides harboring the corresponding kinase--specific consensus sequences. Moreover, immunohistochemical investigations were performed in order to study possible subcellular changes in signaling molecule locations upon the various challenges applied.

In summary the results showed some of the CK2--specific inhibitors were anti-- hypoxic, i.e. they prevented the expression of HIF1α during hypoxia thus establishing a link between protein kinase CK2 and hypoxia.

Biography

Olaf-Georg Issinger has completed his Ph.D at the age of 26 at the University of Freiburg in Germany followed by postdoctoral studies at the University of California, Davis. Currently he is professor at the Department for Biochemistry & Molecular Biology at the University of Southern Denmark. He has published more than 150 papers mostly on cancer research.