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Int J Biochem Cell Biol. 2011 Nov;43(11):1537-49. doi: 10.1016/j.biocel.2011.08.003. Epub 2011 Aug 12.

The emerging role of nuclear factor kappa B in renal cell carcinoma.

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Abstract

Renal cell carcinoma (RCC), the commonest type of kidney cancer, is a highly metastatic and the deadliest of all urologic cancers. Despite the development of many novel chemotherapeutics in recent years, metastatic RCC remains an incurable and lethal disease. The imperative for the identification of novel molecular targets and more effective therapeutics for metastatic RCC remain. One promising target is the transcription factor nuclear factor kappa B (NF- κ B). NF- κ B is unique in the sense that it regulates all important aspects of RCC biology that pose challenge to conventional therapy - resistance to apoptosis, angiogenesis and multi-drug resistance. Aberrations in the von Hippel Lindau gene (VHL) are the most important risk factor for the development of RCC, especially the clear cell type, which constitutes 70-80% of RCC. VHL is a negative regulator of NF- κ B. In the absence of a functional VHL, the expression and activity of NF- κ B are enhanced, which subsequently confer drug resistance and promote epithelial-mesenchymal-transition of RCC. This review provides an overview of RCC, its molecular mechanisms, the role of NF- κ B in carcinomas including RCC, and the rationale for NF- κ B as a target molecule.

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PMID: 21854869 [PubMed - indexed for MEDLINE]

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