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Rupinder Kaur Kanwar, J Cancer Sci Ther 2015, 7:6
http://dx.doi.org/10.4172/1948-5956.S1.047

5th Asia-Pacific Summit on
Cancer Therapy
July 20-22, 2015 Brisbane, Australia

Survivin targeting by an innate immunity component: Emerging biodrug in the existing void of survivin inhibitors

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Survivin is a 16.5 kDa protein of the inhibitor of apoptosis proteins (IAP) family. It has been detected in almost all types of cancer and is a key target for cancer therapy. The overexpression of survivin in tumors is associated with enhanced tumor cell survival and growth, poor prognosis, drug resistance, radioresistance, angiogenesis and regulating metastasis. Several therapeutic strategies to target the expression and function of survivin at various levels have been employed. However, very few have reached to the clinical trial stage and currently, there is a void for promising clinically safe survivin targeting agents (s). More recently, we have identified bovine milk derived lactoferrin (bLf)'s unprecedented survivin targeting activity both at the gene transcription and protein translational levels. Lactoferrin (Lf) is a naturally occurring iron-binding glycoprotein. It is widely known for its multifunctional nature, and is present in external mammalian excretions including tears, sweat and most importantly milk and colostrum. bLf's roles in iron homeostasis, organ morphogenesis, and bridging innate and adaptive immune functions, have resulted in its potential applications in the medical field, along with its wide use as a current nutraceutical and a safe food supplement. bLf has a clinically proven safety profile. More importantly, based on animal feeding studies and the success of human clinical trials in cancer patients, bLf has gained significant attention for its potential as a safe anti-cancer chemopreventive and biodrug. Through preclinical studies and clinical trials, we and others have shown that bLf in its native form, and in iron saturated form (Fe-bLf) can not only inhibit tumor development but also reduce growth and metastasis of solid tumors. Earlier, bLf's anti-cancer activity was reported due to its immunity boosting activities and activation of cancer cell specific apoptotic mechanisms, through the modulation of both the extrinsic and intrinsic pathways. The capacity of safe and non-toxic bLf to target survivin expression and modulation of cancer cell growth and apoptosis highlights an exciting potential for bLf as a much needed anti-survivin biodrug. The novel findings of the study with promising results on anti-cancer efficacy will be presented in the meeting.

Biography

Rupinder K Kanwar completed her PhD from PGIMER, India. Since then she has worked in India, New Zealand and Australia, in a variety of positions supporting and building new research programs related to interdisciplinary research, international collaborations and large-scale initiatives ranging from biomedicine to nanomedicine. She has 15 years' experience in drug discovery targeting cancer and chronic inflammation, and delivered both academic and industry-oriented research with 75 peer reviewed publications. Dr Kanwar is a key inventor in more than 20 published and live patents/ applications. Her current research focuses on targeting molecular pathogenesis of chronic inflammatory diseases and cancer with nanodrug and nanodiagnostic developments. At Deakin University, she is providing leadership to her research team on deciphering novel molecular targets for protein biodrugs to treat cancer and cardiomyopathy. She serves as an editorial advisory board member and reviewer of several international journals. Dr Kanwar has been invited as a speaker, and chair in national & international conferences, and her research presentations won awards at conferences.

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