Crispin R Dass, Orthop Muscul Syst 2014, 3:2
http://dx.doi.org/10.4172/2161-0533.S1.016

OMICS Group Conferences
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3rd International Conference and Exhibition on
Orthopedics & Rheumatology
July 28-30, 2014 DoubleTree by Hilton Hotel San Francisco Airport, USA

Cardiomyocyte apoptosis versus autophagy with prolonged Doxorubicin treatment: Comparison with osteosarcoma cells

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Doxorubicin (Dox), a frontline chemotherapeutic against osteosarcoma (OS), is plagued by cardiotoxicity amongst other side-effects. Our lab examined apoptotic (Bax) and autophagic (Beclin-1) biomarker levels in human osteosarcoma and cardiomyocyte cell lines as well as in various tissues when mice were exposed to low (1 mg/kg, thrice weekly) and high (3 mg/kg thrice weekly) dose Dox for a month. There was a decrease in Bax and increase in Beclin-1 in cardiac tissue in the high dose group. At low Dox doses of 10 and 100 nM in cardiomyocytes and OS cells, there was a pro-apoptotic effect, with a quicker response in the 100 nM condition, and a slower but steady increase of a pro-apoptotic response at the lower 10 nM dose. However, electron microscopy (EM) revealed changes to human OS cells that resembled autophagy. In culture, cells of both cardiomyocytes and OS revealed a predominant proapoptotic response at the expense of autophagy, though autophagy may be occurring as EM demonstrated.

Biography

Crispin R Dass obtained his B App. Sci. (Hons) and PhD from Charles Sturt University, Australia. He has 22 years of basic and applied research in cancer. He has worked on bigpharma projects (Amgen, Novartis, Glaxo-Wellcome, Johnson & Johnson). He has published in Nature Medicine, Journal of the National Cancer Institute, Journal of Controlled Release and Biomaterials. He has published 147 papers to date, 165 conference presentations, an h-index of 33, with total number of citations for his papers at ~3400. He has also reviewed original research papers in *New England Journal of Medicine and Lancet and Nature Communications.*

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