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Scorpion venoms causes up-regulation of p53 and down-regulation of Bcl-x_L and BID proteins expression by modulating signaling proteins Erk$^{1/2}$, STAT3 and DNA damage in breast and colorectal cancer cell lines

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Scorpion venoms efficiently block the normal neurotransmitter signaling pathway by prejudicing the ion-channel operating mechanism in the body system. Beside its negative effect, venoms also possess some of the beneficial components for the human being. The venom has also been shown to exhibit anti-cancer properties in various cancer types. This unique property of the venom as anti-cancer agent is mainly due to its role in initiating apoptosis and by inhibiting several signaling cascades mechanism which promote cancer cell proliferation and growth. In this study, we examine the effect of venom on phenotypic changes as well as changes at the molecular levels in colorectal and breast cancer cell lines. A dramatic decrease in cell invasion was observed in both cancer cell lines upon venom treatment. Additionally, there was decrease in IL-6, RhoC, Erk$^{1/2}$ and STAT-3 in venom treated cell lines rendering strong messages of its anti-cancer properties. Furthermore, decrease in the expression of anti-apoptotic proteins and also up-regulation of pro-apoptotic proteins by these lines were observed upon venom treatment. Moreover, a vivid picture of DNA damage was also detected upon venom treatment. In conclusion, the scorpion venom possesses significant potential as an anti-cancer agent against colorectal (HCT-8) and breast cancer (MDA-MB-231) cell lines.

Biography

Meshref Ali Al-Amri has completed his Master's degree in Drugs and Toxicology Science from King Saud University and his Bachelor's degree in Pharmaceutical Sciences from the same university. He is the Assistant Director General of Academic Affairs in Medical Services Directorate of Armed Forces, Ministry of Defense, Riyadh, Saudi Arabia. He has published his research work in various reputed journals.

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