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Pinostrobin inhibits human cervical cancer cell proliferation and induces apoptosis by modulating the GSH/NO/ROS signaling pathways

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Gancer is a multifactorial heterogeneous disease and growing public health problem worldwide. It is the second major cause of mortality trailing the cardiovascular diseases. Various therapeutic remedies are available for cure of cervical cancer. However, every single one has some drawbacks associated with them. Cancer treatment therapies need to be revolutionized for prevention of unfavorable effects on normal cells and overcome drug resistance. Among the various natural products, flavonoids-polyphenolic compounds have attracted much attention and have been well-documented for their biological activities. Flavonoids inhibit cancer cell proliferation by modulating the action of enzymes and signal transduction pathways. Pinostrobin, a flavonoid, is a known natural anti-cancerous compound, abundantly present in our dietary intake. The present study highlights the dose dependent cytotoxic potential of pinostrobin against the cervical cancer cells without any cytotoxicity in normal cells. Remarkable morphological changes in mitochondria, nucleus, and cells structure were examined and live cell imaging results indicated that pinostrobin significantly induced apoptosis in cancer cells. The cellular assays were performed to assess the apoptosis in cancerous cells with the help of their respective markers and found altered cell integrity, mitochondrial membrane potential, elevated ROS generation and fragmentation of DNA. Cytotoxicity of pinostrobin is highly associated with various signaling pathways. Therefore, the level of GSH and NO were analyzed and found reduced in pinostrobin treated cells. The penetration and retention study of pinostrobin by the cells suggested that pinostrobin can act as a good therapeutic agent. Thus, pinostrobin has the potential to be developed as a chemotherapeutic agent for cervical cancer treatment.

Biography

Alka Jadaun is pursuing her PhD from School of Biotechnology, Jawaharlal Nehru University, India. She has published some papers in reputed journals and is currently working as a Senior Research Fellow (SRF) in School of Biotechnology, Jawaharlal Nehru University, India.

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