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Intracellular ROS signaling in cancer stem cell tumorigenesis**K P Mishra**

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Evidence has been accumulating to suggest that a low concentration of ROS can maintain the stemness of cancer stem cells (CSCs) and contribute to induction of tumorigenesis by mediation of oxidative DNA damage. Multiple pathways are known to exist in the regulation of ROS in cancer stem cells as well as in various types of tumor cells. It is, for instance, known that, under hypoxic environment, increased levels of ROS induce the expression of hypoxia inducing factors (HIFs) in CSCs resulting in the up-regulation of stem cell markers and the reduction of intracellular ROS levels. It is observed from growing number of studies that reduced intracellular ROS is linked to facilitating CSCs survival and proliferation. Research on ROS in the diagnosis and treatment of tumor is becoming a forefront area in formulating future cancer treatment strategy. Research from our laboratory has shown potential of herbal drug based induction of oxidative stress in many tumor cell types for achieving preferential killing of cancer cells including cancer stem cells. Our recent research results on silibinin and ellagic acid as radio-sensitizing agents have demonstrated considerable promise as anticancer drugs involving oxidative stress mechanism. This presentation will highlight the critical role played by redox signaling in the mechanism of tumor radio-toxicity with relevance to cancer radiotherapy.

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