Sweta Srivastava et al., J Stem Cell Res Ther 2017, 7:9 (Suppl)
DOI: 10.4172/2157-7633-C1-029

RhoC-Rock2 signaling regulate radio-resistance in cervical carcinoma by modulating DNA repair activity

Sweta Srivastava[1], **Annapurna P**[1, 2], **Pavana Thomas**[1], **Avinash H Udayshankar**[1], **Sudhir Krishna**[2], **Jayashree Thatte**[1] and **Cecil Ross**[1]
[1]St. John's National Academy of Health Sciences
[2]National Centre for Biological Sciences

Therapy resistance and tumor recurrence severely affects therapy outcome. Colossal efforts have gone into understanding radio-resistance in various tumors, however; there is no definitive study to exemplify the molecular mechanisms of radio-resistance in cervical carcinoma. In our previous report we have shown that RhoC regulates cervical carcinoma tumor progression. In this study we extend the role of RhoC to therapy resistance. We also suggest that Rock2, a downstream effector of RhoC, modulates radio-resistance in cervical carcinoma. Using CaSki and SiHa cell lines, our observations suggested that increased expression of RhoC and nuclear Rock2 ($Rock2_{nu}$) confer therapy resistance to cervical cancer cells and inhibition of RhoC and Rock2 results in increased sensitization to radiation. Interestingly high $Rock2_{nu}$ cells also co-express increased CDK1, indicative of potential to progress in cell division. Additionally flow cytometric live sorting of $Rock2_{high}$ cells and further cell survival analysis showed that $Rock2_{high}$ cells have better cell survival ability as compared to $Rock2_{low}$ cells. The interaction between Rock2 and *BRCA2* has also been observed in the resistant cells suggesting its crosstalk with the DNA damage response machinery. Inhibition of Rock2 in cervical cancer resulted in disruption of DNA repair machinery. We extended our finding to other cell lines including Detroit 562 and patient biopsies derived cells and observed increased radio-sensitization upon irradiation *in vitro*. Our observations thus suggest that RhoC-Rock2 signaling pathway is a novel mechanism of regulation of radiation resistance in cervical cancer.

Biography

Sweta Srivastava has her expertise in Cancer Biology and has been working towards understanding the molecular mechanisms involved in regulating therapy response. Her research activities include understanding the role of small molecule GTPases and their effector kinases in tumor progression.

sweta.s@stjohns.in

Notes: