**EGFR-dependent Impact of Indol-3-Carbinol on Radiosensitivity of Lung Cancer Cells**

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**Abstract** Background and objective Indole-3-carbinol (I3C) is a naturally occurring phytochemical found in cruciferous vegetables. The aim of the present study is to investigate the influence of I3C on radiosensitivity in epidermal growth factor receptor (EGFR)-positive and EGFR-negative lung cancer cell lines. **Methods** Human lung adenocarcinoma NIH-H1975 cells and human lung squamous carcinoma NIH-H226 and NIH-H520 cells were routinely cultured in RPMI-1640. MTT assay and clonogenic assay were used to detect cell growth and survival, respectively. Western blot and RTPRC assay was employed to detect EGFR protein and mRNA expression. **Results** 5 μmol/L of I3C significantly reduced radiosensitivity of EGFR-positive NIH-H1975 and NIH-H226 cells, but failed to affect radiosensitivity of EGFR-negative NIH-H520 cells. Furthermore, I3C caused an increased expression of total EGFR and pEGFR (Y845) protein in NIH-H1975 and NIH-H226 cell lines, but not in NIH-H520 cell line. A reduction of EGFR expression by EGFR-siRNA significantly inhibited I3C-caused radioresistance in NIH-H1975 cells. **Conclusion** Our data presented here for the first time demonstrate that I3C reduces radiosensitivity of lung cancer cells by mediating EGFR expression, indicating that EGFR may be an important target for I3C-mediated radioresistance in lung cancer.

**Key words** Indol-3-carbinol; Lung neoplasms; Radiosensitivity; Epidermal growth factor receptor

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