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Upregulation of JUN, FOS & AP1 in head and neck cancer cells upon exposure to high nitric acid (NO) environment

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Objectives: When subjected to high concentration of NO, H&N tumor cell express more aggressive phenotype compared to non-exposed cell. Upon exposure these cells exhibit adaptation causing greater metastatic potential. Currently, little is known about the process how these NO exposed cancer cells acquire such an aggressive phenotype. In order to mimic the clinical findings, five H&N cell lines were adapted to high concentrations of NO. It appears that AP1, which is a transcription factor protein, composed of JUN and FOS family proteins. These proteins are responsible for various cellular process including cell differentiation, proliferation and apoptosis which up regulate these cells. Jun codes for c-Jun, a proto-oncogene, which has been implicated in aggressive breast and lung cancer cells.

Methods: This study used five human H&N cells lines (SSC-016, SSC-040, SSC-056, SSC-114, and SSC-116). Slow exposure of high NO was used on the cell lines to increase quantities of DETA-NONOate (NO donor). Both the parent and NO cell lines were tagged with red/green fluorescent markers and mRNA was isolated. A gene chip analysis was used to assess genome wide gene expression. Via scratch assays cell migration rates were assessed. Within these five cell lines JUN, FOS, and AP1 genes were up-regulated when exposed to high NO. Increased migration velocities were demonstrated among all three genes.

Results: In the five cell lines JUN, FOS and AP1 genes were up-regulated. Compared to the parent cell lines, an increased migration velocity was observed.

Conclusions: Results indicated that exposure to high levels of NO results in up-regulation of JUN, FOS, and AP1 in human H&N cell lines (SSC-016, SSC-040, SSC-056, SSC-114, and SSC-116). Within these cell lines JUN, FOS, and AP1 genes had an increased migration velocities which demonstrated an increased tumor aggressiveness.

Biography

Ravi Kant Bhaskar has completed his Medical degree from Calcutta University in India. He has been working as a Medical Practitioner in Delhi, India for past few years. He has worked in various capacities as Medical Practitioner from Private Hospitals to Government dispensaries and Hospitals and possesses a good experience as Clinician. He recently moved to USA with an aim to join Internal Medicine Residency Program. He volunteered in the 43rd ISOBM annual conference, September 2016 held in Chicago, which was attended by very well established medical scientists and other scientists working in the field of oncology from all over the world.

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