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Progression and control of tumorigenesis in f1 mice from the ethylnitrosourea exposed mothers involve mir-21 and pi3k/pten/akt pathway along with apoptotic events

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Tumors develop gradually as a result of a complex interaction of factors related to heredity, environment, lifestyle or diet. The understanding of the mechanisms could help in controlling the disease process and chemoprevention through the consumption of natural dietary compounds may reduce both morbidity and mortality from cancer. Epigenetic changes are correlated with tumor development showing aberrations in DNA methylation and histone modifications. Changes in DNA methylation and histone modification pattern and alteration in their modifying enzymes have been correlated with cancer development. To find the early changes, we evaluated the epigenetic events from early to late stage of the urethane induced lung tumor development in mouse model and tried to correlate the molecular events with the progression of tumor. Tumors did not appear after 1 or 4 weeks but well defined tumors appeared subsequently. The expression of *EZH2*, *SUV39H1* and *G9a* is correlated with histone modification in terms of H3K9me2, H3K27me3 and H4K20 status and gene promoter interactions during the course of urethane induced lung tumorigenesis between 1-36 weeks. We addressed the hypothesis by examining the tumor development, DNA methylation and status of *DNMTs*, *HDACs*, *MBDs* and related genes along with micro RNA- 29b in the same samples. Development of tumors and molecular alterations were protected in presence of inositol hexaphosphate (IP6), a naturally occurring sugar phosphate. Study suggests that the epigenetic alterations before and during the tumor development could be used as possible targets of preventive strategies.

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