

## Fluoride-Induced Stress and Its Association with Bone Developmental Pathway in Osteosarcoma Cells

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**Abstract :** Oxidative stress is known to depreciate normal functioning of osteoblast cells. Present study reports oxidative/inflammatory signatures in fluoride exposed human osteosarcoma (HOS) cells and its possible association with the genes involved in bone developmental pathway. Microarray analysis was performed to understand the possible molecular mechanisms of stress-mediated bone lose in HOS cells. Cells were chronically exposed with sub-lethal concentration of fluoride. Global gene expression is profiling revealed 34 up regulated and 2598 down-regulated genes, which were associated with several biological processes including bone development, osteoblast differentiation, stress response, inflammatory response, apoptosis, regulation of cell proliferation. Microarray data were further validated through qRT-PCR and western blot analyses using key representative genes. Based on these findings, it can be proposed that chronic exposure of fluoride may impair bone development via oxidative and inflammatory stress. The present finding also provides important biological clues, which will be helpful for the development of therapeutic targets against diseases related bone.

**Keywords :** bone, HOS cells, microarray, stress

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