Title: Different concentrations of nitric oxide changed the histone deacetylase 2 gene expression and activity of glutathione peroxidase

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Abstract
Nitric oxide (NO) is a two atom free radical that plays an important role as a secondary messenger in cell physiological functions and change of its value influences proteins activity and triggering intracellular signaling cascades. Low frequency electromagnetic field (EMF) by targeting the plasma membrane as well as entering force to the ions and small electrical ligands alters the cell biology such as cell differentiation. One way of protein activity regulation is post translation modifications that changes structure and function of proteins. Nitric oxide is a signaling molecule in cells that high concentration of this free radical modifies proteins after the translation. NO binds to tyrosine and cysteine residues and influence on the enzyme activity and following that cell fate. In this study effect of high and low concentrations of NO and electromagnetic field as physical inducer were investigated on the histone deacetylase 2 (HDAC2) gene expression and glutathione peroxidase (GPx) enzyme activity in rat bone marrow mesenchymal stem cells. The cell viability examined in different concentrations of nitric oxide too. The results showed high and low concentrations of NO and EMF alter the gene expression of HDAC2 differently than the control group. NO decreases the activity of GPx. Reduction of cell viability by high concentration of NO attended with the decreased gene expression of HDAC2 and GPx activity, preview important role of NO in cell physiology and fate. NO in high concentration can lead apoptosis and cause to differentiate the stem cells.

Biography
Nazanin Haghighat has completed her PhD at the age of 29 years from department of biophysics, Tarbiat Modares University, Iran. She has published 3 papers in reputed journals. She is teaching biochemistry, biochemistry-physics and stem cell biology in Semnan University, Iran, now.

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