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Mild Hyperthermia-induced Cell Cycle Arrest under P53-dependent Pathway in Human Cells

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p53 has identified as a tumor suppressor protein to protect cells from DNA damage. p53, also well known for a transcription factor, can activate genes such as p21, bax, gadd45 and induce a number of the responses such as differentiation, senescence, DNA repair, apoptosis and the inhibition of angiogenesis to protect cells. Many mechanisms of p53 activation have been studied. Most recently, p53 activation by hyperthermia has been reported. In our study, activation of p53 was induced showing cell cycle arrest in response to mild hyperthermia. In addition, we showed that thioredoxin reductase (TR) was activated. Indeed, p53 activation also plays as a transcription factor activating gene, gadd45 in heat-stressed cells. We suggest that p53 activation induced by mild hyperthermia plays an important role in cell cycle arrest in human cell system.

Keyword : hyperthermia, p53, cell cycle arrest