

Comparison between Effects of Free Curcumin and Curcumin Loaded NIPAAm-MAA Nanoparticles on Telomerase and Pinx1 Gene Expression in Lung Cancer Cells

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Abstract : Herbal compounds such as curcumin which decrease telomerase and gene expression have been considered as beneficial tools for lung cancer treatment. In this article, we compared the effects of pure curcumin and curcumin-loaded NIPAAm-MAA nanoparticles on telomerase and PinX1 gene expression in a lung cancer cell line. A tetrazolium-based assay was used for determination of cytotoxic effects of curcumin on the Calu-6 lung cancer cell line and telomerase and pinX1 gene expression was measured with real-time PCR. MTT assay showed that Curcumin-loaded NIPAAm-MAA inhibited the growth of the Calu-6 lung cancer cell line in a time and dose-dependent manner. Our q-PCR results showed that the expression of telomerase gene was effectively reduced as the concentration of curcumin-loaded NIPAAm-MAA increased while expression of the PinX1 gene became elevated. The results showed that curcumin loaded NIPAAm-MAA exerted cytotoxic effects on the Calu-6 cell line through down-regulation of telomerase and stimulation of pinX1 gene expression. NIPAAm-MAA could be the good carrier for such kinds of hydrophobic agent.

Keywords : curcumin, NIPAAm-MAA, PinX1, telomerase, lung cancer cells

Conference Title : ICNB 2015 : International Conference on Nanotechnology and Biotechnology

Conference Location : Melbourne, Australia

Conference Dates : December 13-14, 2015