

The effects of PLGA-Curcumin nano-formulation on the levels of Nf Kappa B sub-units in cancer cell lines

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In addition to the toxic effects of cancer chemotherapeutics on healthy cells, it is important to increase the effectiveness of these drugs by means of pro-oxidant polyphenols especially by considering their costly price in clinical use. Polylactic-co-glycolic acid (PLGA), the most used one among polymeric materials, is a biomaterial commonly used in new drug delivery systems and approved by the FDA. In many studies, safety and efficacy of curcumin in prevention and treatment of cancer has been emphasized. NF-κB; is a transcription factor in regulation of many genes which are responsible of inflammation, immune response, proliferation and apoptosis. The increase in the level of reactive oxygen species due to stress affects the NF-κB transcription factor in the cell. A better understanding of the NF-κB structure and mechanism of action will play an important role in the reduction of cellular stress and hence the emergence of new approaches and mechanisms of action in eliminating the negative effects of stress. The investigation of the effect of PLGA-Curcumin Nano-formulation (Nano Curc) on the level of NF-κB subunits in cancer cells were investigated in this study.

The effect of Nano-Curc on the ratios of four sub-units of NF-κB including P65, P52, P50 and C-Rel were evaluated on MCF-7 breast cancer cell lines which were pre-treated with paclitaxel. P65 was the most suppressed sub-unit by Nano-Curc which could be counted as the success of this nano formulation in decrease of inflammation at cancer tumor.