Using Nano Technology as an Anticancer Agent: Anticancer Effect of Catechin-coated Iron Oxide Nano Particles on Leukemic Monocytes

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Cancer is a major cause of mortality in most developed and underdeveloped countries of the world, and is now considered to be secondary only to that of myocardial infarction. It is a growing public health menace and more than six million new cases of cancer are reported every year. With the emergence of Nano technology, most of research groups are interested on targeted cancer therapies in order to minimize the side effects on healthy tissues while delivering the drug to pre-determined targets located in transformed cells. In this research the effects of Catechin coated Iron Oxide Nanoparticles (CCIONP) were evaluated on an established cell line, Human leukemic monocyte (THP1) cells (from ATCC TIB – 202). Catechin is a flavonoid found in tea; Camellia sinensis and it was coated into 25 nanometer diameter of Neat Iron Oxide Nano particles (NIONP). Subsequently, its effect was evaluated on THP1. Three different end points and three different concentrations have been used. Groups were divided as; (G1=THP1 treated with CCIONP, G2= THP1 treated with NIONP, G3= THP1 treated with pure Catechin,). At the end of incubation periods specified above cell viability and morphology were studied by (a) trypan blue dye exclusion assay, and (b) direct microscopy. Results were analyzed using standard Student T test by compared with the control group (G2). According to the results it was given a Statistically Significance value (Cell viability $p<0.0001$). On these facts it can be speculate that there is a significant effect of CCIONP on reduction of human leukemic cancerous cells.

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