

**YRA01: Design and synthesis of Mangiferin (MGF)/Chitosan (CS)nanoparticles (NPs) (MCN) as an oral delivery supplement and its efficacy against oxidative stress induced cancer**

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Oxidative stress is involved in diseases such as cardiovascular diseases, chronic obstructive pulmonary disease, chronic kidney disease, neurodegenerative diseases, and cancer. Antioxidant therapy could be used to prevent oxidative stress-induced damages in cell. A present study was done to evaluate the efficacy of Mangiferin (MGF)/Chitosan (CS) nanoparticles (NPs) (MCNs) against the oxidative stress-induced damages leading to cancer. MGF is an antioxidant polyphenol with numerous therapeutic properties. MCN was developed by ionic gelation method to improve the solubility and bioavailability of MGF. Free radical scavenging assays showed that the NPs had significant free radical scavenging activity in the cell-free system. To investigate the attenuative role of MGF-CSNPs against induced oxidative stress by chemicals, on normal kidney epithelial (NKE) cells nephropathic system was developed. Pre-treatment with the NPs prevented the induction of cytotoxicity induced by NaF and maintained the level of intracellular antioxidant enzyme level in the cells. NPs also inhibited lipid peroxidation and protein oxidation, thus retarding the formation of free radicals. MCNs also had pronounced cytotoxic effects against colorectal cancer (HT 29), cervical cancer (HeLa) and breast cancer (MCF 7) cell lines. The study could establish that the MCNs might be a promising candidate for oral delivery. MCNs can be used in food and pharmaceutical industries as a therapeutic agent to prevent oxidative stress-induced health disorders and cancer

**Keywords:** Oxidative stress; Antioxidants; MGF; CS; NPs; Cytotoxicity