EFFECTS OF NOVEL WATER SOLUBLE NANOCURCUMIN ON ARSENIC-INDUCED GENOTOXICITY IN RATS

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Poly (lactic-co-glycolic acid) encapsulated curcumin nanoparticles (CUR-NP) were synthesized to explore their therapeutic application of arsenic-induced genotoxicity in rats. The CUR-NP prepared by emulsion technique was spherical in shape with an encapsulation efficiency of 86.5%. The particle size ranged between 120 nm to 140 nm, with the mean particle size being 130.8 nm. The CUR-NP showed biphasic release pattern and it was dissolved in water easily. Rats were exposed to sodium arsenite (25ppm) daily through drinking water for 42 days. CUR-NP (100mg/kg) was orally administered to rats for last 14 days of arsenic exposure to evaluate the therapeutic potential of CUR-NP in bone marrow cells. The result indicated that arsenic produced significant increase in formation of chromosomal aberrations, micronuclei and DNA damage in bone marrow cells. Arsenic-induced changes were decreased by the treatment with curcumin and CUR-NP. However, the effect of CUR-NP treatment produced more ameliorating effect than free curcumin.

Key words: Curcumin; Arsenic; Nanocurcumin; Genotoxicity; Rats