**Effect of Copper-Glutathione nano complexes on intracellular Copper handling machineries**

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**Abstract**

In biological systems, nanotechnology exhibits exciting novel approaches which include, targeted drug delivery, finding out clinically relevant biomarkers, use as biosensors etc. (1).

Characteristics of many novel nanosystems have been considered for this, of which Copper nanoparticle is new on the horizon as they are cheaper when compared to Gold and Silver. Even though, Copper nanoparticles have bioluminescent property it gets easily oxidized. A biocompatible reducing agent Glutathione helps to overcome this disability of Copper nanoparticle (2).

Since Copper handling machinery and Glutathione metabolism have to work conjointly for the maintenance of normal cell growth (3) we have analyzed the effect of Copper-Glutathione nano complexes on Copper handling machinery. In this study, we investigated the cytotoxicity due to Copper-Glutathione nano complexes in Hela cell line. The effect of Copper-Glutathione nano complexes in the expression of proteins such as CTR1, ATOX1, CCS, ATP7A and ATP7B which are involved in Copper handling machinery were also monitored. From MTT assay, we have found that Copper –Glutathione complexes exhibits good biocompatibility. The transcriptional profile of these proteins showed significant variation when compared with untreated cells. These results indicate that Copper-Glutathione nano complexes have a significant effect in intracellular Copper handling machinery.

**Keywords: Copper-Glutathione nano complexes, Copper handling machinery, Hela**

**References**

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