ABSTRACT:

Nanotechnology has become one of the fastest growing fields in today's world. In the past two decade it has gain must interest due to significant research efforts in almost every field of science. It has broad range of applications in agriculture, industrial products and medicine. Nanoparticles are considered to be more feasible because of their improved structure and properties as compared to bulk materials. Silver nanoparticles are utilized in number of applications such as antibacterial, antiviral and antifungal treatments. Copper nanoparticles are of tremendous interest because of their catalytic electrochemical and optical properties. The excessive use of nanoparticles and their addition into the agriculture through various ways can have an adverse effect on vegetation. This study aims to investigate the genotoxic effect of silver and copper nanoparticles using roots of *Allium cepa* L. silver nanoparticles were prepared by chemical reduction method using silver nitrate and sodium citrate. Copper nanoparticles were synthesized by co-precipitation method using copper sulphate and sodium hydroxide. *Allium cepa* roots after being germinated in tap water were subjected to 20ppm, 50ppm and 100ppm concentrations of silver and copper nanoparticles for 24 hour. The chromosomal aberration and DNA damage were calculated. The DNA of roots was extracted using CTAB extraction method. For chromosomal aberration studies Aceto orecin staining were employed. The DNA damage was calculated through comet assay. The length of tail determines the percentage of DNA damage. . Silver nanoparticles have been shown to decrease the mitotic index from 44.5% at 20ppm nanoparticles concentration to 18.51% at 100ppm nanoparticles concentration. On the other hand the mitotic index of roots treated with copper nanoparticles showed a decrease in mitotic index from 45.5% at 20ppm to 26.49% at 100ppm nanoparticles concentration. It has been concluded that with the increase in concentration of nanoparticles there were decrease in mitotic index and increase in aberration percentage. The aberration percentage of roots treated with silver nanoparticles was slightly higher than those treated with copper nanoparticles. The percentage of abnormality index and mitotic index indicated that high concentrations of nanoparticles can cause serious damage to genetic material of cells and can also cause genetic mutation and ultimately cell death can occur.