

Title:**Effect of Medium Composition on the Viability of CHO Cells in the Presence of Silver Nanoparticles****Authors & affiliations:**

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Abstract:

Variability in nanomaterial properties, especially agglomeration phenomena has been shown to depend on pH of the media, ionic strength and concentration of dissolved organic matter. The objectives of our work was to determine whether the composition of cell culture media can influence the physico-chemical behavior of silver nanoparticles and consequently its response in genotoxicity studies in somatic cells. Genotoxicity studies with AgPVP nanoparticles were done in Chinese hamster ovary cells. In order to establish the optimal dosage for the HGPRT gene mutation assay, cell viability after exposure to AgPVP was assessed by the methyl tetrazolium (MTT) assay. Influence of addition of FCS (fetal calf serum) to the cell culture medium Mc Coy's 5a was studied simultaneously. Using concentrations of AgPVP between 0,1 ppm and 100 ppm the MTT assay indicated that the mitochondrial activity and cell viability of CHO-K1 cells were affected by addition of FCS into the medium: FCS being missing an up to 20% decrease of cell viability of CHO cells was observed compared to the same AgPVP concentrations made in complete Mc Coys's 5a medium with 10%FCS.

Our cell viability studies with silver nanoparticles in CHO cells showed that the absence of protein is mainly responsible for the loss of mitochondrial activity of the CHO cell line. The interaction between the protein in the cell culture medium and the silver nanoparticles obviously prevents the CHO cells from being killed.

This strong effects of protein on the cell viability of CHO cells in the presence of silver nanoparticles demonstrate the need to study nanosized anorganic particles under well defined and standardized conditions.