

Cytotoxicity mechanism of Ag particles in *Paramecium*

Taiki ABE and Nobuyuki HAGA (Ishinomaki Senshu University, Ishinomaki)

SUMMARY

We have previously reported that Ag nanoparticle dispersion causes severe cytotoxicity in *Paramecium* cells. The Ag-treated cells show a series of remarkable behavioral changes for several minutes before cell death, which suggest a hazardous effect on ciliary movements controlled by cell surface membrane potentials. To detect the molecules associated with cell death caused by Ag nanoparticle treatments, we examined polypeptide changes in Ag-treated cells using SDS-PAGE followed by a silver staining method. We found one major polypeptide band of about 60 kDa molecular weight that appears after treatment in *P. caudatum* and one of about 65 kDa in *P. tetraurelia*. We then compared polypeptides emerging after three different lethal treatments: AgNO₃ solution, heat and freezing. Emergence of a similar polypeptide was observed in AgNO₃-treated cells in both species, but was not observed in heated or frozen cells. This indicates that emergence of the 60 and 65 kDa polypeptides is Ag specific. The amino acid sequence of these polypeptides will be the subject of future experiments.