

Article outline

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Abstract

Keywords

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2. Materials and methods

3. Results and discussion

4. Conclusion

Conflict of interest

Acknowledgments

Appendix A. Supplementary data

References

Figures and tables

Table 1

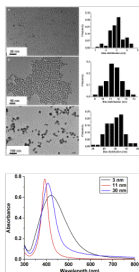
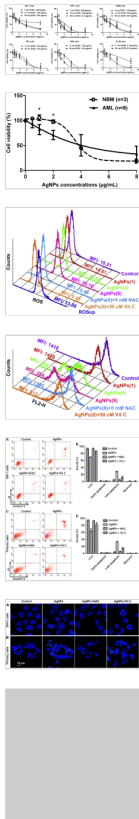


Table 2



ec1

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Anti-leukemia activity of PVP-coated silver nanoparticles via generation of reactive oxygen species and release of silver ions

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Abstract

Silver nanoparticles (AgNPs) have anti-cancer effect. However, whether and how these particles could inhibit the growth of acute myeloid leukemia (AML) cells is unclear. In the present study, we prepared AgNPs with various sizes and investigated their cytotoxic effect on AML cells. We found that AgNPs could inhibit the viability of AML cells including the isolates from AML patients. AgNPs caused the production of reactive oxygen species (ROS), losses of mitochondrial membrane potential (MMP), DNA damage and apoptosis. Both vitamin C (Vit C) and N-acetyl-L-cysteine (NAC) could completely reverse the generation of ROS upon AgNPs, however only NAC but not Vit C could protect the cells from losses of MMP, DNA damage and apoptosis thoroughly. Similar results were obtained when cells were treated with silver ions alone. As NAC was not only an antioxidant to scavenge ROS but also a silver ion chelator, these data supported the model that both generation of ROS and release of silver ions played critical roles in the AgNPs-induced cytotoxic effect against AML cells. Taken together, this work elucidated the cytotoxic effect of AgNPs on AML cells and their underlying mechanism and might have significant impact on AML treatment.

Keywords

Silver nanoparticles; Acute myeloid leukemia; Cytotoxicity; Reactive oxygen species; Silver ions

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