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Effects on cytotoxicity and antibacterial properties of the incorporations of silver nanoparticles into the surface coating of dental alloys

Key words: Silver nanoparticles (AgNPs), Dental castings, Cytotoxicity, Antibacterial, MC3T3-E1, BMSC

Research Summary

- **This study was mainly to investigate the changes in cytotoxicity and antibacterial properties after silver nanoparticles were incorporated into the surface coating of dental alloys.**
- **After statistical analysis, results were obtained including the following aspects:**
 - The cobalt chromium alloys and pure titanium all had cytotoxicity to MC3T3-E1 and BMSC and that the incorporation of silver nanoparticles could reduce this cytotoxicity.
 - The concentrations of silver nanoparticles adopted in this study were found to have no antibacterial action against SA and MS.

Innovation points

- **A series of comprehensive tables and figures were generated to summarize the data of this research.**
 - Table 1 | Cell growth rate and material toxicity level standards.
 - Table 2 | Results of the spectrum analysis.
 - Figure1 | SEM images and spectrum analysis of dental castings (KN) coated with a low concentration of silver nanoparticles.
 - Figure2 | Effects of silver nanoparticles at three concentrations on cytotoxicity of MC3T3-E1 cells.
 - Figure3 | Effects of three concentrations of silver nanoparticles on the cytotoxicity of BMSC cells.
 - Figure4 | SA inhibition zone of silver nanoparticles at three concentrations.
 - Figure5 | Antibacterial effects of AgNPs Samples at three concentration compared to SA and MS.