Stability of antibacterial silver carboxylate complexes against staphylococcus epidermidis and their cytotoxic effects

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The antibacterial effects against Staphylococcus epidermidis of five silver carboxylate complexes with anti-inflammatory ligands were studied in order to analyze and compare them in terms of stability (in solution and after exposure to UV light), and their antibacterial and morphological differences. Four effects of the Ag-complexes were evidenced by transmission electronic microscopy (TEM) and scanning electronic microscopy (SEM): DNA condensation, membrane disruption, shedding of cytoplasmic material and silver compound microcrystal penetration of bacteria. 5-Chlorosalicylic acid (5Cl) and sodium 4-aminosalicylate (4A) were the most effective ligands for synthesizing silver complexes with high levels of antibacterial activity. However, Ag-5Cl was the most stable against exposure UV light (365 nm). Cytotoxic effects were tested against two kinds of eukaryotic cells: murine fibroblast cells (T10 1/2) and human epithelial ovarian cancer cells (A2780). The main objective was to identify changes in their antibacterial properties associated with potential decomposition and the implications for clinical applications.

Human ovarian cancer cell (A2780)

Murine fibroblast

Silver antibacterial

Staphylococcus epidermidis

5-chlorosalicylic acid

aminosalicylic acid derivative

antiinfective agent

coordination compound

salicylic acid derivative

silver

animal

cell line

chemistry

comparative study

drug effect

drug stability

human

microbial sensitivity test

mouse

scanning electron microscopy

Staphylococcus epidermidis

synthesis

transmission electron microscopy

Aminosalicylic Acids

Animals

Anti-Bacterial Agents

Cell Line

Coordination Complexes

Drug Stability

Humans

Mice

Microbial Sensitivity Tests

Microscopy, Electron, Scanning

Microscopy, Electron, Transmission

Salicylates

Silver

Staphylococcus epidermidis