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### Safety Evaluation of Inorganic Antimicrobial Agents (3)

#### —Influences of Inorganic Antimicrobial Agents on Indigenous Microorganisms on Skin—

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#### Abstract:

The occurrence of mycosis due to an imbalance in indigenous microorganisms on the skin through the excessive use of antimicrobial processing agents is a matter of concern. We investigated the relationship between the amounts of metals eluted with artificial sweat and saliva from antimicrobial agents and processed cloths and their influences on indigenous microorganisms on skin. The relationships between 4 bacterial species (*Staphylococcus aureus*, *Escherichia coli*, *Staphylococcus epidermidis*, and *Propionibacterium acnes*) and 3 fungal species (*Candida albicans*, *Trichophyton mentagrophytes*, and *Aspergillus niger van tieghem*), the metal concentrations in artificial sweat and saliva, minimum inhibitory concentration (MIC), and minimum bactericidal concentration (MBC) were investigated. (1) MIC: The MIC values against *Candida* and *Trichophyton* were similar to the bacteria, and were lower than that against *Aspergillus*. (2) MBC: Although survival rates varied among the microorganisms, fungi survived at a higher metal concentration. In the MBC measurement, microorganisms were exposed to metal ions for a specified time (2 or 24 hours), and then their survival was investigated by culture under conditions appropriate for each microorganism. Since the conditions were close to those of exposure of coexisting microorganisms on skin, these findings suggest that fungi survive at a metal concentration that kills bacteria, up setting the balance of indigenous microorganisms naturally present on skin, which may cause mycosis.

**Key words:** inorganic antimicrobial agents, artificial sweat, artificial saliva, indigenous microorganisms on skin, elution of metals, minimum inhibitory concentration, minimum bactericidal concentration

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