Synopsis of Original Research Paper

Study on sterilization agents for lowering preservative in cosmetics

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Parabens are alkyl ester derivatives of parahydroxybenzoic acid and are widely used as preservatives in cosmetics, foods, toiletries products. These parabens are essential for keeping quality high in the perishable products. However, parabens are known to present a very weak contact allergy to user's skin. We attempted to construct a series of sterilization agents for lowering preservative in cosmetics. These agents have dendritic lysine peptides structure as a spacer on a polystyrene bead. Peptide immobilized beads are also effective in reducing the pollution of wastewater. The surface ionic property of the beads is polycationic due to numerous α- or ε-ammonium groups. These polycationic beads were interacted with anionic liposomes, the liposome leakage activities were increased with surface charge density and generation number of oligo lysine dendron groups. We tested antimicrobial activity of novel surfactants containing dendritic oligo lysine groups for confirmation effectiveness of numerous ammonium groups. It was revealed that a series of surfactants were active against Gram-positive bacterium (e.g., *Staphylococcus aureus*) than Gram-negative bacterium (e.g., *Escherichia coli*). These results suggest that the peptidoglycan layer of Gram-positive bacterium cells is interacts specifically with ammonium groups.