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Fine Structural Demonstration of Anionic Sites on Streptococcal and Staphylococcal Envelopes by Cationic Dyes

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Abstract: Anionic sites on bacterial envelopes of *Streptococcus* β -haemolyticus and *Staphylococcus aureus* ATCC 6538 P were investigated on materials fixed with Karnovsky fixative containing the cationic dyes ruthenium red (RR) or alcian blue (AB). Electron dense granules and short fibrils were found to be irregularly distributed around the cells on the glycocalyxes of both genera. An electron dense stained reaction with RR or AB on the cell membrane and glycocalyx indicates the presence of rich anionic sites on these structures. Electron microscopic observations demonstrate that anionic sites in the glycocalyx are responsible for the adherence phenomenon during the formation of microcolonies. For structural improvement of bacterial envelopes, the RR procedure was more effective than the AB procedure.

Key Words: *Streptococcus* β -haemolyticus *Staphylococcus aureus* ATCC 6538 P, Glycocalyx, Anionic sites, Ruthenium Red, Alcian Blue

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