

Antiplatelet Activity of Staphylococcus aureus Lipoteichoic Acid Is Mediated Through a Cyclic AMP Pathway

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摘要

Abstract

In this study, Gram-positive *Staphylococcus aureus* lipoteichoic acid (LTA) dose dependently (0.1-1.0 microg/mL) and time dependently (10-60 min) inhibited platelet aggregation in human platelets stimulated by agonists (i.e., thrombin and collagen). LTA also dose dependently inhibited intracellular Ca(2+) mobilization in human platelets stimulated by collagen. In addition, LTA (0.5 and 1.0 microg/mL) dose dependently increased the formation of cyclic AMP but not cyclic GMP in platelets. LTA (0.5 and 1.0 microg/mL) did not significantly increase the production of nitrate within a 10-min incubation period. Rapid phosphorylation of a platelet protein of M(r) 47,000, a marker of protein kinase C activation, was triggered by PDBu (0.03 microM). This phosphorylation was dose dependently inhibited by LTA (0.5 and 1.0 microg/mL) within a 10-min incubation period. Furthermore, LTA (0.5 and 1.0 microg/mL) also inhibited platelet aggregation induced by PDBu (0.03 microM) in human platelets. These results indicate that the antiplatelet activity of LTA may be involved in the increase of cyclic AMP, leading to inhibition of intracellular Ca(2+) mobilization and protein kinase C activity. Therefore, LTA-mediated alteration of platelet function may contribute to bleeding diathesis in septicemic and endotoxemic patients.