

Inhibition of The Stem Cell Factor-Induced Migration of Mast Cells by Dexamethasone

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Mast cells accumulation can be causally related with several allergic inflammations. Previous work has demonstrated that glucocorticoids decreased tissue mast cell number and stem cell factor (SCF)-induced migration of mast cells required p38 mitogen-activated protein kinase (MAPK) activation. In the present study, we investigated the effects of dexamethasone on SCF-induced migration of rat peritoneal mast cells (RPMCs). SCF significantly induced migration of RPMCs at 4 h. Dexamethasone dose-dependently inhibited SCF-induced migration of RPMCs (about 90.1% at 100 nM, $P < 0.05$). MAPK p38 inhibitor, SB203580 (20 μ M) also inhibited the SCF-induced migration. The ability of SCF to enhance morphological alteration and F-actin formation was also abolished by treatment of dexamethasone. Dexamethasone inhibited SCF-induced p38 MAPK activation to near basal level and induced the MKP-1 expression. In addition, SCF-induced inflammatory cytokine production was significantly inhibited by treatment of dexamethasone or SB203580 ($P < 0.01$). Our results show that dexamethasone potently regulates SCF-induced migration, p38 MAPK activation and inflammatory cytokine production through expression of MKP-1 protein in RPMCs. Such modulation may have functional consequences during dexamethasone treatment, especially mast cell-mediated allergic inflammation disorders.