Inhibition profiles of sodium cromoglycate and nedocromil sodium on mediator release from mast cells of human skin, lung, tonsil, adenoid and intestine

Abstract:

We have studied an aspect of the functional heterogeneity of human mast cells, namely responsiveness to the inhibitory effects of sodium cromoglycate and nedocromil sodium. The effects of these drugs were examined on the release of histamine and PGD2 from mast cells of human skin, lung, tonsils, adenoids and intestine. A high concentration, 1000 microM, of sodium cromoglycate was required to significantly inhibit histamine release from lung and tonsillar mast cells. Nedocromil sodium, 1000 microM, was more effective than sodium cromoglycate against histamine release from lung, tonsillar and adenoidal cells. Both compounds showed tachyphylaxis in lung and tonsillar mast cells but not in adenoidal and intestinal mast cells. In contrast, in intestinal mast cells, the effect of nedocromil sodium was weaker and more variable than sodium cromoglycate. Skin mast cells differed from mast cells of the other anatomical sites in being unresponsive to sodium cromoglycate and nedocromil sodium. Our results confirm that high concentrations of sodium cromoglycate and nedocromil sodium are required to achieve even modest inhibition of mediator release from human mast cells under in vitro conditions. Notwithstanding this, the results also indicate that differences exist among skin, lung, tonsillar, adenoidal and intestinal mast cells with respect to their sensitivity to sodium cromoglycate and nedocromil sodium, thus extending our knowledge of functional heterogeneity within the human mast cell populations.