VASOACTIVE-INTESTINAL-PEPTIDE (VIP) INHIBITS SUBSTRATE ADHESION CAPACITY OF RAT PERITONEAL MACROPHAGES BY A MECHANISM THAT INVOLVES CAMP

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Abstract: In this study, vasoactive intestinal peptide (VIP) is shown to inhibit substrate adherence capacity of rat peritoneal macrophages. The inhibitory response occurred in the 0.1-1,000 nM range of VIP concentrations and it was a time-dependent process. At 15 min, half maximal inhibition (IC50) was obtained at 0.37 +/- 0.26 nM and maximal inhibition (53.8%) at 10(-6) M VIP. The inhibitory effect of VIP was correlated with the stimulation by this peptide of cyclic AMP (cAMP) production in rat peritoneal macrophages. Moreover, agents that inhibited VIP-stimulated cAMP production, such as the VIP-antagonist [4-Cl-D-Phe6, Leu17]-VIP and somatostatin, also decreased the inhibitory effect of VIP on substrate adherence capacity of macrophages. On the contrary, the phosphodiesterase inhibitor 3-isobutyl-1-methylxanthine (IBMX) and the lipid-soluble derivative of cAMP N6,2'-O-dibutyryl cAMP (Bu-cAMP) inhibited the adherence of macrophages to substrate and potentiated the inhibitory action of VIP. These results demonstrate that VIP inhibits substrate adherence capacity of rat peritoneal macrophages by a mechanism that involves cAMP, and show, for the first time, an action of VIP on the function of peritoneal macrophages.

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