Lactoferrin Stimulates Erythrocyte Na^+/K^+-Adenosine Triphosphatase: Effect of Some Modulators of Membrane Phosphorylation

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We studied the effect of some modulators of signal transduction on the erythrocyte Na^+/K^+-ATPase. Go6976 and Go6983 (protein kinase C inhibitors) showed a stimulatory effect and calyculin A (protein phosphatase inhibitor) exerted an inhibitory effect on the Na pump activity. Some of the tested modulators of cell-signaling [protein phosphatase(s), phosphodiesterase, calmodulin and some protein kinases] interfered with the lactoferrin (Lf) stimulatory effect on the sodium pump. Lf itself was able to modulate the effect of some agents upon the pump activity. Moreover, an additive effect of stimulation was found when Lf and some agents were used simultaneously. The summarized results showed that: (i) Lf upregulates the Na^+/K^+-ATPase in erythrocytes and facilitates the K^+ influx into the erythrocytes; (ii) the effect of pump stimulation is mediated by phosphorylation processes. These results suggest a potential opportunity for using Lf alone or together with other agents as a stimulator of the erythrocyte Na^+/K^+-ATPase.

Key words: Lactoferrin, Erythrocytes, Na^+/K^+-ATPase