THE ADJUVANT ACTIVITY OF LACTOFERRIN IN THE GENERATION OF DTH TO OVALBUMIN CAN BE INHIBITED BY BOVINE SERUM ALBUMIN BEARING α-D-MANNOPYRANOSYL RESIDUES

MAJA KOCIĘBA¹, MICHAŁ ZIMECKI¹ and MARIAN KRUZEL²

¹Department of Experimental Therapy, Institute of Immunology and Experimental Therapy, Polish Academy of Sciences, Wrocław, Poland,
²Houston Health Science Center, University of Texas, Texas, USA

Lactoferrin (LF) is an iron-binding glycoprotein present in the cytoplasmic granules of neutrophils and in external secretions. Although the biological role of human and bovine lactoferrin has been studied extensively, the nature and function of lactoferrin receptors is uncertain. Recently, we determined that methyl-α-D-mannopyranoside given intraperitoneally (i.p.) could suppress the adjuvant activity of LF in the generation of the delayed type hypersensitivity (DTH) to ovalbumin (OVA). We concluded that the lactoferrin effects in DTH are mediated by carbohydrate-recognizing receptors such as the mannose receptor. This study indicates that subcutaneous administration of very small doses of α-D-Man-bovine serum albumin complex together with the sensitising dose of antigen gave the same effects as i.p. administration of methyl-α-D-mannopyranoside, another blocker of the MR, although of a much lower affinity to the receptor as D-Man-BSA. The block of the adjuvant effect of LF by alpha-D-Man-BSA complex, given together with the sensitising dose of antigen suggests that the function of antigen-presenting cells in the skin (presumably dendritic cells expressing the MR) is inhibited. The results of our study therefore indicate that a receptor with an affinity to mannose is essential for the mediation of adjuvant lactoferrin function in the generation of DTH.

This work was sponsored by Polish Research Committee (KBN), grant No. 6 PO5A 103 21.