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Effect of lactoferrin on the methotrexate-induced suppression of the cellular and humoral immune response in mice.

Artym J, Zimecki M, Kruzel ML.

Institute of Immunology and Experimental Therapy, Polish Academy of Sciences, Wroclaw, Poland.

Our previous studies revealed that lactoferrin (LF) reconstitutes the cellular and humoral immune response in cyclophosphamide-treated mice. The aim of this investigation was to establish whether the suppressory effects of methotrexate (MTX) on the cellular and humoral immune response can be modulated by LF. We found that MTX, given intraperitoneally (i.p.) at a dose of 200 mg/kg b.w., 48 h following sensitization of CBA mice with ovalbumin (OVA), reduced by 80% the delayed type hypersensitivity (DTH) response. Co-administration of LF in drinking water (0.5% solution) for the duration of the experiment (4 days) restored the DTH response almost to the control level. However, LF was not able to restore the primary humoral immune response, measured by the number of antibody-forming cells (AFC) to sheep erythrocytes (SRBC) in the spleens when MTX (1 mg/kg b.w.) was administered to mice i.p. 48h post immunization. On the other hand, mice treated with LF after second challenge with SRBC showed significant restoration of the MTX-suppressed humoral immune response following the booster immunization. In addition, LF (1 microg/ml) restored the secondary humoral immune response to SRBC in vitro when MTX (0.05-1 mM) was added to cell cultures on day 2 following cell culture initiation. These data demonstrate that LF preferentially restores the cellular immune response impaired by MTX treatment. It seems that LF also prevents the block of the activity of T memory cells in the secondary, humoral immune response. Taken together, we demonstrated that LF given orally can reduce the toxic

effects of MTX.

PMID: 15736418 [PubMed - indexed for MEDLINE]
