

PubMed

Abstract

Full text links



Drug Dev Ind Pharm. 1998 Feb;24(2):115-27.

Immuno-, phagocytosis-modulating, and antitoxic properties of amino acids and peptide preparations.

Belokrylov GA¹, Derevnina OY, Molchanova IV, Sorochinskaya EI.

Author information

Abstract

The influence of amino acids, their mixtures, and peptides on the immune response, phagocytosis in vitro, and in CBA mice, and broiler chickens, as well as on in vitro ability of listed preparations to protect animals' splenocytes from toxic action of benzene and aflatoxin B1 were studied. It was shown that amino acids (Asp, Glu, Val, Trp), amino acid mixtures (cerebrolysine, levamine, aviamine), and the dipeptides GluTrp and LysAsp stimulate the immune response to SRBC at subcutaneous and peroral application. The peptides thymopentin, thymosin alpha-1, and peptide mixtures (thymosin fraction 5, thymalin) stimulate the immune response only at the site of subcutaneous injections. Lys, Tyr, and bursin (LysHisGly-amide), regardless of the mode of application, do not change, but Arg inhibits the immune response. None of the preparations studied change the immune response to Viantigen. Levamine, cerebrolysine, and aviamine are immunoreactive only at low doses (6.5×10^{-2} - 6.5×10^{-8} mg/kg). At a dose of 65 mg/kg these preparations lose immunostimulating properties. Amino acids (6.5×10^{-2} mg/kg), which stimulate, rather than influence or inhibit the immune response, enhance phagocytosis of *S. aureus* by granulocytes, regardless of mode of application. Levamine and cerebrolysine in the range of doses of 6.5×10^{-2} - 6.5×10^{-6} mg/kg do not influence phagocytosis; at a dose of 65 mg/kg, phagocytosis is enhanced. Aviamine stimulates phagocytosis as well at low and at high doses. The ability of preparations to protect in vitro at a low concentration (1.3×10^{-3} mg/ml) murine or chickens' splenocytes from toxic action of benzene and aflatoxin B1 (at 1:1000 dilution) does not correlate with their action on the immune response and phagocytosis. The protective actions revealed by the following preparations include: (a) stimulating the immune response and phagocytosis (Glu, Asp, Trp, amino acid mixture aviamine, the dipeptides LysAsp, GluTrp, the peptide mixtures thymalin, thymosin fraction 5); (b) enhancing the immune response but not influencing phagocytosis (Met, levamine, cerebrolysine); (c) influencing neither the immune response nor phagocytosis (Gly, Ile). At the same time those preparations (Lys, Arg) that stimulate phagocytosis but influence the immune response in a different way (Lys does not influence; Arg suppresses the response) are inert as antitoxic agents. Antitoxic properties of amino acid preparations levamine, cerebrolysine, and aviamine retain as well in the assays at a rather large (1.3 mg/ml) concentration like their phagocytosis-stimulating properties.

PMID: 15605441 [PubMed - indexed for MEDLINE]