

USE OF *N*-ACETYLMURAMOYL-L-ALANYN-D-ISOGLUTAMINE AND ITS DERIVATIVES AS IMMUNOMODULATORS

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In 1974 scientists-chemists E. Lederer and S. Kotani identified *N*-acetylmuramoyl-L-alanyl-D-isoglutamine (muramyldipeptide, MDP) as the least unit of a cell wall of gram-positive and gram-negative bacteria and as a part of the fissile fraction of micobacteria. From this point the new time in an immunology began. Great efforts of scientists were directed to establish of relationship structure–activity for derivatives of muramyldipeptide. New synthetic low-molecular adjuvants were made. *N*-Acetylmuramoyl-L-alanyl-D-isoglutamine as an adjuvant influences on nonspecific resistance to infections, activates synthesis of endogenic mediators, induces a hypersensitivity of delayed type, and also evinces antitumor activity. However it was noted that *N*-acetylmuramoyl-L-alanyl-D-isoglutamine along with adjuvant properties has a number of the ghost effects, for example toxicity and pyrogenicity. These properties interferes with its clinical application. Therefore preparation of synthetic adjuvants, analogues of muramyl dipeptide is an actual task. Synthetic adjuvants are non-toxic, non-immunogenic and high effective. Some of these drugs are already undergoing advanced clinical trials. More than 800 MDP analogues have been synthesized for the purpose of studying the structure–activity relationship and the made of new immunomodulators. The action of some synthetic derivatives of muramoyl dipeptide with hydrophilic, amphiphilic and lipophilic properties were described. Examples are Romurtide, Murabutide, Glimurid and Lycopid as effective drugs with immunomodulating actions. Murabutide (France) has established itself as a drug that stimulate nonspecific resistance to virus infections. Romurtide (Japan) is a highly effective drug for restoring the number of leukocytes in cancer patients after chemotherapy or radiotherapy. Lycopid is able to stimulate the development of both a cell and humoral immune response. It also has antiinfective activity. Glimurid (Russia) was

established as an effective drug for the prevention and correction of immune and hematological disorders caused by chemotherapy of cancerous tumors.

Keywords: *N*-acetylmuramoyl-L-alanyl-D-isoglutamine, muramoyldipeptide, MDP, adjuvant, activity, immunomodulator.

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