The Effect of b-Butylglycosid Muramyl Dipeptide on the *Helix albenscens* Neurons Functional State

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It is known that muramyl peptides have somnogenic activity; they are able to prolong slow-wave sleep both with intracerebral and intravenous injection. It is well-known, that muramyl peptides induce various mediators of immune response when acting on immune system cells. It may be supposed, that the muramyl peptides influence on CNC cells can be either direct or mediated by a mediator. Concrete mechanism clarification of muramyl peptides effect presents a significant interest. It has been used N-{2-O-[butyl-2-acetamido-2,3-dideoxy-β-D-glucopyranosid-3-yl]-D-lactoyl}-D-isoglutamine (β-butyl-MDP) for study of muramyl peptides influence on the neurons functional state of a mollusc's nervous system isolated ganglions. The synthesis of this compound has been carrying out originating from 1-OH-derivative of muramic acid, namely 2-acetamido-4,6-di-O-acetyl-2-deoxy-3-O-[(R)-1-(methoxycarbonyl)ethyl]-α-D-glucopyranose. This substance was being treated by an excess of thionyl chloride in the absolute benzene. Having been got glycosyl chloride has been used for glycosylation of n-butanol according to Helferich. O-Acetylated β-benzylglycosid of N-acetylmuramic acid methyl ester has been deacetylated by Zemplen method. The treatment of the deacetylated product with an excess of 2,2-dimethoxypropane in the presence of HCl traces has lead to a corresponding 4,6-isopropylidene derivative. The carboxylic group of muramic acid has been unblocked with alkaline hydrolysis. Then it has been activated by DCC-HOSu-method and condensed with benzyl ester L-alanyl-D-isoglutamine formate in the presence of N-methylmorpholin. The isopropylidene protective group in the prepared glycopeptide was removed off by 60% CH_3COOH hydrolysis and the benzyl ester of an isoglutamine fragment was removed by catalytic hydrogenolysis over the palladium black. The electrophysiological intracellular study of the dorsal surface of subpharyngeal complex of the mollusc's isolated CNC (central nervous system) neurone's activity by affecting β-butyl-MDP was carried out. It has permitted to find that substance in concentration of 10^{-8} mol/L has a significant and antidromous (facilitating in 60% and depressing in 40% of cases) effect on the amplitude, duration of upgoing and downgoing phases of exciting postsynaptic potentials, action potentials and trace hyperpolarizing of neurones. Parameters changes expressiveness and trend depends on the dose of the substance, a duration of the effect and the type of the initial neurone's activity. The substances concentration enlargement in the solution, washing the ganglions, to 10^{-4} mol/L, as a rule depressed the functional state of the neurons being studied. It's supposed, that the specified muramyl peptide, interacting with various receptors of the neurones membranes, makes a selective, antidromous effect on the speed and direction of different ions conveyance through the membrane, that may lie in the basis of its mechanism action.