

**RELATIVE INVESTIGATION OF BIOLOGICAL ACTIVE SUBSTANCES
ICHFAN-10 AND MELAFEN ACTIONS TO THE BIOLOGICAL MEMBRANES
STRUCTURE AND FUNCTIONS**

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This investigation deals with the two Biological Active Substances (BAS) with different properties. Neuroprotector Ichfan-10 (amphiphilic, membrane-acting hybrid antioxidant – inhibitor of acetylcholinesterase) and plant growth stimulator melafen (hydrophilic derivation of melamine and phosphinic acid) were tested for the comparison of the mechanism of actions at the wide region of concentrations (10^{-2} M - 10^{-17} M). The differences of big concentrations of BAS effects were found. But the small and ultra low concentrations of BAS have the similar type of actions. The differential adiabatic scanning microcalorimetry, the measurement of light scattering with right angle, and the ion selective potentiometric method were used. Liposomes DMPC, erythrocytes ghost, erythrocytes and Erhlich ascitic carcinoma (EAC) cells were tested. We found that the structural organization of membranes was changed by the different concentrations of BAS. The main determinative characteristic at this case was the kind of BAS. Hydrophilic melafen changed the DMPC lipid domains only under the 10^{-2} M concentration. And 10^{-3} M, 10^{-5} M, 10^{-8} M not influenced to the DMPC lipid domains and the protein domains of erythrocytes ghost structures. Thus, the structure was changed by melafen under the 10^{-2} M only. But the amphiphilic Ichfan-10 changed the structural organization of the protein domains of erythrocytes ghost structures under the 10^{-5} M, 10^{-6} M. The 4 orders were the total inequality. The functions of membrane components were changed by the BAS actions under the similar concentrations. This phenomenon was not depended on degree of substances membranotropic, possibly. May by, the main influences these BAS were exerted to the extracellular surface of membrane. As was shown at the Ca^{2+} -dependent K^{+} -channels of erythrocytes the membranotropic Ichfan-10 acted under the 10^{-4} M and 10^{-14} – 10^{-16} M. Hydrophilic melafen changed EAC cells purinoreceptor's signals from the plasmalemma to the intercellular Ca^{2+} -depo, and decreased the reverse signal to the plasmalemma with the actions to the Ca^{2+} -dependent K^{+} - and Cl^{-} -channels and cell capacity Ca^{2+} -channels that regulated the cell volume.