

THE EFFECT OF SEMISYNTHETIC DERIVATIVES OF PHENOLIC LIPIDS ON ACTIVITY OF MEMBRANE ENZYMES

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Phenolic lipids are the natural amphiphilic long-chain homologues of orcinol (1,3-dihydroksy-5-methylbenzene). They occur in numerous plants and microorganisms [Kozubek, A. and Tyman, J.H.P. **Chem. Rev.** 99 (1999) 1]. Resorcinolic lipids exhibit high affinity for lipid bilayer and biological membranes and are able to modify the activity of membrane enzymes [Kozubek, A. *et al.* **Z. Naturforsch.** 47c (1992) 41 and Kozubek, A. **Z. Naturforsch.** 47c (1992) 608]. The incorporation of these compounds into liposomal and biological membranes induces an increase of their permeability for small nonelectrolytes and cations and often result in lysis of the cells or liposomes [Stasiuk, M. and Kozubek, A. **Cell. Mol. Biol. Lett.** 2 (1997) 77 and Gubernator, J. *et al.* **Biochem. Biophys. Acta** 1418 (1999) 253]. The influence of semisynthetic derivatives of phenolic lipids on activity of two peripheral membrane enzymes (phospholipase A₂ and acetylcholinesterase) was studied. The activity of PLA₂ (from the venom of *Naja mocambique*) was measured with spectrofluorimetric method using pyrene-labeled probe and DPPC liposomes as a substrate [Lethonen, Y.J. and Kinnunen, P.K. **Biophys. J.** 68 (1995) 1888]. Increasing amounts of studied semisynthetic derivatives of alkylresorcinols were added to DPPC liposomes (1-10 mol%). The highest concentrations cause considerable inhibition of phospholipase A₂ activity. The activity of acetylcholinesterase was determined by colorimetric assay [Ellman, G.L. *et al.*, **Biochem. Pharmacol.** 7 (1961) 88]. Acetylthiocholine iodide was a substrate for AChE from erythrocyte ghost membrane. The effect of studied compounds on enzyme activity is variable.

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