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BOOK OF ABSTRACTS

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Bispidine derivatives as stimulus-sensitive ‘molecular switches’ for liposomal nanocontainers creation

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3,7-Diazabicyclo[3.3.1]nonane (bispidine) scaffold is widely used in medicinal chemistry. A lot of studies were dedicated to the conformational studies of 3,7-diazabicyclo[3.3.1]nonanes and the influence of various factors on the conformational equilibria. In our studies we showed that amphiphilic lipid-like derivatives of 3,7-diazabicyclo[3.3.1]nonanes could serve as the stimulus-sensitive ‘molecular switches’ and could be used as the components of liposomal nanocontainers. Liposomes, spherical lipid bilayer vesicles are widely used for the controllable encapsulation and release of drugs. Liposomal containers protect the encapsulated drugs from degradative enzymes and thus enhance the circulation time and bioavailability of drugs. In this report is being described synthesis of lipid-like amphiphilic compounds based on 3,7-diazabicyclo[3.3.1]nonane with two different substituents at nitrogen atoms and positions 1, 5. Such compounds are capable of incorporating into the lipid bilayer and further undergoing conformational reorganization, this is accompanied by formation of defects in the lipid packing and an increase in the permeability of liposomal membrane under external factors as pH changes and complexation with metal cations Cu^{2+} and La^{3+} [1-2].

[1] Veremeeva P.N., Bovina E.M., Grishina I.V., Lapteva V.L., Palyulin V.A., Zefirov N.S. Mendelev Commun., 2018. V. 28. P. 25-26. [2] P. N. Veremeeva, I. V. Grishina, O. V. Zaborova, A. D. Averin, V. A. Palyulin, Tetrahedron 75 (2019) 4444. *The research was funded by RFBR grant No. 18-33-00591\19.*

