11th INTERNATIONAL CONFERENCE ON PORPHYRINS & PHTHALOCYANINES

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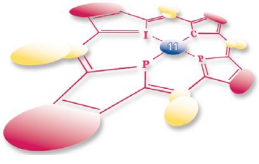
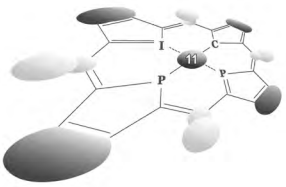


ICPP-11

VIRTUAL MEETING

28 JUNE - 3 JULY 2021

BOOK OF ABSTRACTS

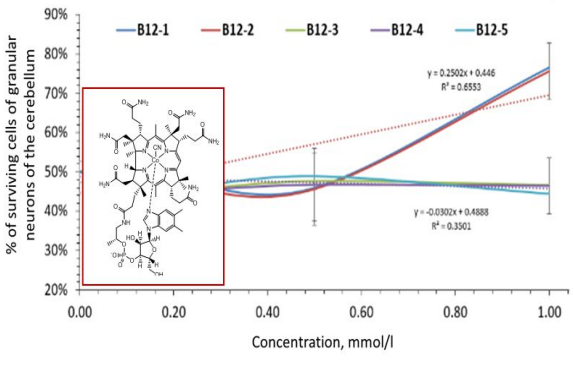


Bioinformatic and chemoneurocytological analysis of the pharmacological properties of vitamin B_{12} and some of its derivatives

Gromova O.A.[a], Torshin I.Yu.[a], Maiorova L.A.[b], Koifman O.I.[b,c], Salnikov D.S.[b]

[a]*Institute of Pharmacoinformatics, Federal Research Center "Computer Science and Control" of Russian Academy of Sciences, Moscow, Russia*
[b]*Institute of Macroheterocyclic Compounds, Ivanovo State University of Chemistry and Technology, 153000 Ivanovo, Russian Federation*
[c]*G.A. Krestov Institute of Solution Chemistry, Russian Academy of Sciences, 153045 Ivanovo, Russian Federation*

More than 3500 biological properties of vitamin B_{12} and five of its derivatives (aquacobalamin, cyanoaquacobyrinic acid heptamethyl ester, dicyanocobyrinic acid heptamethyl ester and stable yellow corrinoid) have been assessed by bioinformation analysis [1]. Based on the data obtained (including the assessments of the interaction of molecules with rat proteome proteins), conclusions were drawn about the potential effects of the investigated substances. In particular, it has been shown that heptamethyl esters of cyanoaquacobyrinic and dicyanocobyrinic acids, as well as a stable yellow corrinoid (antivitamin), can be recommended for further study as analgesics and anti-inflammatory drugs. Cyanocobalamin and aquacobalamin are distinguished by the least cumulative properties in comparison with other studied compounds. Chemoneurocytological analysis of compounds showed that the last ones may have the neuroprotective effects (Fig.1). All the vitamin B_{12} derivatives studied in this paper have been synthesized and characterized. Research has begun on their associative behavior in capsules [2], in layers at the water-air interface [3,4], and redox activity in films on solid substrates. It is shown that derivatives tend to aggregate on the water surface and reveal redox activity in thin films. Study of the anticonvulsant and remyelinating potential of cyanocobalamin and its derivatives in a model of primary generalized seizures in rats showed that the use of cyanocobalamin and aquacobalamin does indeed have a pronounced protective effect. The compounds reduce the severity, duration and number of primary generalized seizures, stimulate anticonvulsant effects.



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