



Society of Physical Chemists of Serbia

PHYSICAL CHEMISTRY 2021

*15th International Conference on
Fundamental and Applied Aspects of
Physical Chemistry*

PC2021

The Conference is dedicated to the

30th Anniversary of the founding of the Society of Physical Chemists of Serbia

and

100th Anniversary of Bray-Liebhafsky reaction



PHYSICAL CHEMISTRY 2021

15th International Conference on Fundamental and Applied Aspects of Physical Chemistry

Organized by

The Society of Physical Chemists of Serbia (SPCS)



in co-operation with

Institute of Catalysis, Bulgarian Academy of Sciences



Boreskov Institute of Catalysis, Siberian Branch of Russian Academy of Sciences



and

Members of the University of Belgrade:



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H-11-P**INFLUENCE OF POLYOXOPALLADATES(II) ON ECTO-NUCLEOSIDE TRIPHOSPHATE DIPHOSPHOHYDROLASES**

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Polyoxopalladates (POPs) are discrete, anionic palladium(II)-oxo nanoclusters combining properties of polyoxometalates and palladium(II), and thus are highly promising for the development of novel antitumor metallodrugs. The aim of this study was to investigate *in vitro* the influence of three POP salts with approved anti-neuroblastoma action, $\text{Na}_8[\text{Pd}_{13}\text{As}_8\text{O}_{34}(\text{OH})_6] \cdot 42\text{H}_2\text{O}$ (**Pd₁₃**), $\text{Na}_4[\text{SrPd}_{12}\text{O}_6(\text{OH})_3(\text{PhAsO}_3)_6(\text{OAc})_3] \cdot 2\text{NaOAc} \cdot 32\text{H}_2\text{O}$ (**SrPd₁₂**), and $\text{Na}_6[\text{Pd}_{13}\text{O}_8(\text{PhAsO}_3)_8] \cdot 23\text{H}_2\text{O}$ (**Pd₁₃L**), on E-NTPDase activity using rat synaptic plasma membranes (SPMs) isolated from *Wistar* brain as a model system. Dose-dependent inhibition of E-NTPDases was obtained within concentration range 2×10^{-6} - 1×10^{-3} mol/L for all investigated POPs. Inhibition parameters, IC_{50} value and Hill's coefficient, n_{H} , were determined by sigmoidal fitting the experimental results. The calculated IC_{50} values were $(1.08 \pm 0.25) \times 10^{-4}$, $(1.19 \pm 0.13) \times 10^{-4}$, and $(2.06 \pm 0.88) \times 10^{-4}$ mol/L for **Pd₁₃**, **SrPd₁₂**, and **Pd₁₃L**, respectively, indicating their similar inhibitory strengths. The n_{H} values were determined to be < 1 , indicating negatively cooperative binding for all POPs studied. The observed inhibitory effect of these anti-neuroblastoma POPs on E-NTPDase activity suggest that the inhibition of E-NTPDases, the enzymes representing the major part of purinergic signaling, could be considered as a putative mechanism of antitumor action and a new strategy in the development of novel antitumor therapeutics.