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New peroxocompounds for medicine, their crystal structure and neuroprotective capacity**Adrianna Sławińska**

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Peroxocompounds are featured by possibility of generation of dioxygen in its first excited singlet state (1O_2). These compounds belong to a specific group of polyoxocompounds (POMs). One of the methods of their synthesis is based on reacting of an aqua solution of hydrogen peroxide with transition metal precursor like Mo, W, V. Peroxometalates are reactive, usually unstable and sometimes even explosive. In our laboratory, we have obtained peroxocompounds with organic blocks directly connected with Mo atoms that results in unusual properties and/or interesting molecular architectures [5]. The investigated peroxomolybdates possess nicotinic or picolinic acid N-oxides fragments; the cations in these salts are: K^+ , Na^+ and NH_4^+ . Although peroxocompounds have been found to possess antiviral, antibacterial and antitumor properties [1,2,3], their neuroprotective capacity needs to be clarified. The only available report on neuroprotective potential of POMs has been published recently [4]. In addition to the dioxygen in its first excited singlet state, the organic components like nicotinic/picolinic acid N-oxides differ in the relative position of the N-oxide and carboxylic COO^- groups, which could influence the catalytic properties and substantiate unique neuroprotective activity of the peroxocompounds. Currently, we are testing three of five peroxocompounds in mouse primary neuronal cell cultures. Preliminary data confirmed the lack of toxic effects of the tested compounds in a concentration range of 0.1–10 μM , both in respect to caspase-3 and lactate dehydrogenase activities in neocortical cultures at 7 day in vitro. Subsequent research is needed to verify their neuroprotective potential. Acknowledgements the support of InterDokMed project no. POWR.03.02.00-00-I013/16.

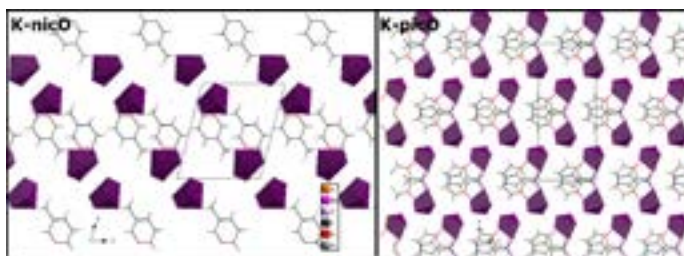


Figure. K-nicO: dipotassium bis(l-pyridine-N-oxo-3-carboxylato)bis(oxidodiperoxidomolybdate(VI)) dihydrate; K-picO: Potassium oxidodiperoxido(pyridine-N-oxo-2-carboxylato)-molybdate(VI). Differences: connection in K-nicO and K-picO between organic part (part of nicotinic/picolinic N-acid) and inorganic part (Mo atom coordinate by seven oxygen atoms in the form of a pentagonal bipyramid).

Biography

Adrianna Sławińska graduated in Advanced material and nanotechnology at the Jagiellonian University, Cracow, with her master degree in 2016. She is currently pursuing her Ph. D. degree in the group of Prof. Wiesław Łasocha at Jerzy Haber Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences and Dr. Małgorzata Kajta at Institute of Pharmacology, Polish Academy of Sciences. Her current research interests are synthesis new polyoxo- and peroxo-compounds and crystal structure analysis of obtained powder products. She also interests potential utilization this new compounds in medicine and examination their neuroprotective capacity. (orcid.org/0000-0002-3426-2100)

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