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EDITION OF GLOBAL CONFERENCE ON

PHARMACEUTICS AND NOVEL DRUG DELIVERY SYSTEMS

VIRTUAL EVENT

SEPT 08-09

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BOOK OF ABSTRACTS

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INDEX

Contents

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Acetylcholinesterase and ATPases: targets of biologically active compounds

Acetylcholinesterase is a serine hydrolase whose key biological role is the termination of impulse transmission at cholinergic synapses by rapid hydrolysis of the neurotransmitter acetylcholine. The reversible inhibition of brain acetylcholinesterase is the major therapeutic target in the treatment of Alzheimer's disease associated with loss of cholinergic neurons in the brain and the decreased level of acetylcholine, whereas toxic effects are related to irreversible modulators of the enzyme activity. Na+/K+-ATPase is a transmembrane protein regulating many cellular functions, involving those associated with tumor cell growth. In addition, particular Na+/K+-ATPase subunits are expressed in some cancer cells and changes in Na+/K+-ATPase activity and relative subunit abundance were detected in various carcinoma cell lines. Accordingly, design and synthesis of novel compounds have been directed towards new modulators of Na+/K+-ATPase, which selectively target these cellular abnormalities. Ecto-nucleoside triphosphate diphosphohydrolases (ENTPDases) are plasma membrane bound enzymes representing the major part of purinergic signaling. Increased E-NTPDases levels were observed in cancer cells due to their abnormal cellular growth and proliferation. Accordingly, the decrease of E-NTPDase activity could be regarded as a new approach in the development of antitumor drugs. This presentation will be focused on metal-based compounds such as polyoxometalates which are discrete, negatively charged metal-oxo clusters of early d-block metal ions in high oxidation states, surrounded by oxygen atoms. These compounds were approved to exhibit a variety of biological actions such as anticancer, antimicrobial and antidiabetic properties. However, the mechanism of their bioactivities has not been completely understood yet. It has been assumed that polyoxometalates interact with different enzyme families extracellularly located on the plasma membrane such as phosphatases and ecto-nucleotidases. This presentation will primarily be directed to acetylcholinesterase, Na+/K+-ATPase and E-NTPDases as potential targets of polyoxometalate pharmacological and toxicological activities.

Audience Take Away Notes:

- The audience will achieve knowledge about promising new-generation drugs
- Other scientific institutions could use the results to expand their research
- The results present a good platform for design and synthesis of new more efficient and less toxic anticancer and anti-Alzheimer's therapeutics.

Biography:

Mirjana B. Colovic, a senior research associate, has been employed at University of Belgrade, Serbia, from 2005. Her research activities are in the field of enzymology, toxicology, biosensors, physiologically active compounds and their interactions with biomolecules. She published over 100 scientific contributions including 48 papers in impacted international journals, 4 chapters in books, 3 articles in national scientific journals, and over 70 abstracts in scientific meetings. She served as a reviewer in over 30 international journals and 9 foreign projects, and as an editorial board member in 2 international journals. Her papers are cited over 2000 times.