

### STUDIES ON CK2 INHIBITION CAPACITY OF 4-AMINOQUINOLINES AND 4-AMINOQUINAZOLINES

NATALIA M. RYABCHENKO<sup>1</sup>, OLEXANDR G. KUKHARENKO<sup>2</sup>,  
VADIM M. SAPELKIN<sup>2</sup>, GALINA G. DUBININA<sup>2</sup>, SVETLANA Y.  
DMITRIEVA<sup>2</sup> and SERGIY M. YARMOLUK<sup>2</sup>

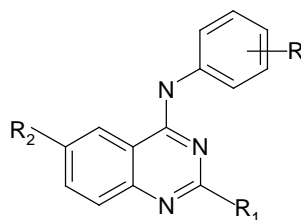
<sup>1</sup>Institute of Experimental Patology, Oncology and Radiobiology of NAN of Ukraine, <sup>2</sup>Institute of Molecular Biology and Genetics of NAN of Ukraine, Zabolotnogo str., 150, Kyiv, 03143, Ukraine, [sergiy@yarmoluk.org.ua](mailto:sergiy@yarmoluk.org.ua)

CK2 is serine/threonine protein kinase recognised to be implicated in the regulation of many cellular processes including DNA replication, transcription, and regulation of cell growth and survival. Its increasing activity is found to be in the promoting of neoplastic transformational cell processes and in the development of infectious diseases. From this point of view CK2 is a promising target for the development of novel and optimisation of known protein kinases inhibitors and drug design for blocking abnormal processes in cells. This fact has been demonstrated by extensive searches for effective and selective CK2 inhibitors.

The goal of our work is primary screening, development and optimisation of potent inhibitors of CK2. More than 100 compounds were examined for the inhibition capacity of CK2 in *in vitro* assays. All tested compounds were synthesised by the chemical group of the Institute of Molecular Biology and Genetics of NAS of Ukraine, and belong to the classes of 4-aminoquinolines and 4-aminoquinazolines.

In comparison with other quinazoline derivatives, the presence of *m*-aminobenzoic acid (R = 3-COOH) in the 4-position of the quinazoline ring leads to a marked increase of inhibition of CK2 activity.

Synthesised structures from the group shown below demonstrating high inhibitory properties, appear to be promising and were selected for further studies and optimisation. We also point out possibilities and directions in the search for new high-specific CK2 inhibitors, based on the combinatorial approach.



R = 4 - CO<sub>2</sub>H, 3 - CO<sub>2</sub>H, 3 - Cl, 4 - I

R<sub>1</sub> = 4 - chlorophenyl, phenyl, H

R<sub>2</sub> = Br, Me, H