Full Paper _____ *Thematic Section:* Biochemical Research.
Registration Code of Publication: 13-35-7-80 *Subsection:* Enzymatic Activity.
The article is published on the materials of speech at the XX All-Russian Conference
"The structure and dynamics of molecular systems." Yalchik 2013.
Publication is available for discussion in the framework of the on-line Internet conference "*Butlerov readings*".
http://butlerov.com/readings/
Contributed: May 17, 2013.

Molecular mechanisms of alkylhydroxybenzenes action on serine proteases activity

© **Julia A. Valiullina**,[+] **Elena A. Ermakova**, **Natalia L. Zakhartchenko**, and **Yury F. Zuev***
Kazan Institute of Biochemistry and Biophysics KSC RAS. Lobachevsky St., 2/31.
Kazan, 420111. Tatarstan Republic. Russia. Phone: +7 (843) 292-62-88.
E-mail: valiullina@mail.knc.ru

*Supervising author; [+]Corresponding author

Keywords*: serine proteases, activity, AHB, mechanisms of action.*

Abstract

The influence of chemical analogues of microbial low-molecular weight anabiosis autoinducers (alkylhydroxybenzenes – AHB) on the structure and catalytic activity of serine proteases – trypsin and α-chymotrypsin, was studied. It has been shown that all AHB homologues studied – C7, C12 and C18, with different alkyl group length, inhibit the catalytic activity of trypsin and α-chymotrypsin. The analysis of tryptophan fluorescence spectra of enzymes showed that activity change, induced by AHB addition, is not related to protein destruction. The molecular docking revealed that AHB molecules blocked the different sites of protein surface. However, the most energy preferable protein-ligand complexes involve the residues of active center of enzymes.