

# 4<sup>th</sup> International Conference on **Clinical & Experimental Cardiology**

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## **N-methyl D-aspartate (NMDA) receptor antagonists and their targets in the heart**

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**E**ffects of the NMDA receptor antagonists memantine, ketamine, eliprodil and others on alteration of heart rate, rhythmicity and conductive system have been reported to follow the action of these drugs on the central nervous system. The mechanism of action of these drugs in the heart has never been studied in detail. We have monitored autonomous heart responses to the agonists and antagonists of the NMDA receptors in rat heart. Subunit composition of the receptors was characterized in four chambers rat and human myocardium using RT-PCR and immunoblotting. The number of active receptors in various regions of the heart was assessed by means of autoradiography. Pharmacological profile of myocardial NMDARs was investigated in rat and human heart using [3H]-MK-801 and [3H]-ifenprdil replacement approach. Finally, we have addressed the possible role of NMDA receptors in pathology. Local changes in expression and activity of the receptors associated with ageing, hypertrophic remodeling and volume/pressure overload was studied in rats and in myocardial samples from patients undergoing mitral valve replacement surgery. The anti-arrhythmic action of selected NMDA receptor antagonists was explored in rat and human heart. The obtained data reveal an important role cardiac NMDA receptors play in control of heart rate and rhythmicity. Alterations in expression and activity of the receptors in diseased heart make these receptors into the attractive pharmacological target.

### **Biography**

Anna Bogdanova studied chemistry at the Lenindrad State University in USSR followed by Ph.D. studies in experimental biophysics at the Humboldt University in Berlin (Germany) and post-doctoral studies in general physiology at the Universities of Turku (Finland) and the University of Zurich. She is an independent group leader and a Senior Lecturer (Privatdozent) at the Veterinary Department of the University of Zurich and a member of the Zurich Center for Integrative Human Physiology. She is a member of American Physiological Society, and an author of more than 40 papers in reputed journals.

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