## 7<sup>th</sup> International Conference on **Proteomics & Bioinformatics** October 24-26, 2016 Rome, Italy

## Nitric oxide synthases and acute sleep deprivation

Zdenka Kristofikova and Jana Sirova National Institute of Mental Health, Czech Republic

A myloid beta peptide and protein tau play a role in the development of Alzheimer disease. It is suggested that normal aging is the main risk factor and chronic sleep deprivation is the contributing risk factor here (e.g. via oxidative stress-evoked changes in amyloid beta and protein tau). A great attention is also focused on nitric oxide directly involved in sleep-wake cycle and Alzheimer disease pathogenesis. The purpose of the study is to evaluate changes in activities of nitric oxide synthases (neuronal, endothelial and inducible) in the right and left cortex of young or old rats exposed to increased locomotion (control experiments for the non- specific effects of the apparatus) or acute sleep deprivation (24 hours). In future, results will be compared with those obtained on young or old rats exposed to chronic sleep deprivation. We used Rat Forced Exercise Bed model 80805A\*C apparatus (Campden Instruments Ltd.) based on the rotational movement of the activity wheel. Experiments were performed on young (3-4 months) and old (11-12 months) male Wistar rats. Activities of neuronal and endothelial synthases were significantly decreased in old compared to young control rats. The activity of inducible synthase was decreased in the left cortex of young rats exposed to increased locomotion. On the contrary, the activity of inducible synthase was increased in old rats exposed to acute sleep deprivation. The previous analysis of human autoptic brains revealed increased activities of all synthases especially in the left side of people with Alzheimer disease. It seems that acute sleep deprivation can evoke some changes in old rats similar to those seen in Alzheimer disease.

## Biography

Zdenka Kristofikova is interested in problems of Alzheimer disease and normal aging for a long time. She focusses especially on "The analysis of the human or rat brain tissue and of cerebrospinal fluid". Her main aims are "Evaluations of new animal models of Alzheimer disease or of new biomarkers of Alzheimer disease sensitive to changes in early stages of the disease".

Zdenka.Kristofikova@nudz.cz

Notes: