

E-mail address: fedotova.brain@gmail.com
(A. Fedotova).

Aim: The aim of our study was to find out EEG markers of inhibitory control in human.

Introduction: The voluntary inhibition is an important component of cognitive control. It is strong in healthy adults and weak in people with schizophrenia. The cortical mechanisms of inhibition are associated with event-related potentials (ERPs). In the case of a saccadic response some new EEG correlates of inhibition could be found.

Methods: Sixteen healthy right-handed subjects (18–22 years) participated in the study. We used a modified “Go/No go delay” paradigm with long interstimulus interval (2800–3000 ms). The task involved two types of target stimuli (“Go”, “No go”) with 50% probability. EEG and saccades were recorded simultaneously. ERPs were determined by means of coherent averaging relative to target stimulus onset. The EEG brain mapping was used to depict spatial dynamics of P1.

Results: P1 peak latency was 90–140 ms and tended to increase in cases of inhibition (by 6 ± 0.5 ms, $p < 0.05$). In the “No go” situation P1 amplitude was significantly lower than that in case of “Go” stimulus presentation (by 3.3 ± 0.7 mV, $p < 0.05$). Regardless of the place where “No go” stimulus appeared, P1 amplitude was significantly higher on the right hemisphere, that is known to be the dominant one for inhibitory control. The EEG mapping data demonstrate the “bottom-up” spreading of P1 foci in “No go” conditions. It also indicates inhibitory processes.

Conclusion: The spatiotemporal parameters of P1 component in “Go/No go delay” paradigm reflect inhibitory processes. Therefore, P1 can be used as EEG marker of inhibitory violations in the clinical research. Our current research involves as subjects the patients with schizophrenia and ultra-high risk patients, as they demonstrate weakened the inhibitory processes. The data would contribute to the reliable diagnostics of schizophrenia at its early stages and to the plausible correction of cognitive impairments.

Acknowledgements: I would like to express my sincere gratitude to my supervisor D.Sc. in Biology Maria V. Slavutskaya.

<http://dx.doi.org/10.1016/j.pbj.2017.07.078>

PS135

Factors influencing the outcome of endovascular embolization of anterior communicating artery aneurysms



I. Kucybala*, K. Krupa, J. Polak, J. Wnuk

Jagiellonian University Medical College, Cracow,
Poland

E-mail address: iwona.kucybala@gmail.com
(I. Kucybala).

Aim: The aim of the study was to assess the influence of morphologic parameters of anterior communicating artery aneurysms and the method of embolization on the success rate of procedure.

Introduction: Endovascular embolization of anterior communicating artery aneurysms is currently considered as primary management tool and the improvement of procedural success rate is crucial.

Methods: Treatment process of 109 patients undergoing endovascular embolization of anterior communicating artery aneurysm was retrospectively analysed. All procedures were performed between August 2006 and December 2016 in Department of Interventional Radiology of University Hospital in Cracow (Poland).

The mean age of patients was 56.7 ± 15.2 years (range 28–91), 50.5% of patients were female. Used methods of embolization: coiling alone, balloon-assisted coiling, stent-assisted coiling, Y-stenting + coiling. Evaluated morphologic parameters: width of the neck, maximal height, maximal width, shape of aneurysm, dome orientation. The outcome of the procedure was assessed with Raymond–Roy occlusion classification. Data were analysed using chi-square test and Student’s *t*-test. Statistical significance was set at $p < 0.05$.

Results: Coiling alone significantly improved outcome of embolization considered as better score in Raymond–Roy occlusion classification, compared to other methods (1.4 ± 0.5 vs. 1.6 ± 0.7 ; $p = 0.034$). In case of irregular aneurysms (85.7% vs. 34.6% (regular aneurysms); $p = 0.025$; OR = 2.615) and those with posterior orientation of the dome (76.9% vs. 36.5% (anterior orientation); $p = 0.005$; OR = 5.810) incomplete embolization (Raymond–Roy class II and III) was significantly more frequent. Within the group of discharged patients, only 33.3% undergone control radiologic examination – 40.7% conventional angiography, 59.3% MR angiography. In that group, 81.5% of aneurysms had better or the same class in Raymond–Roy classification and 18.5% had worse outcome. We did not discovered any statistically significant factor contributing to that phenomenon.

Conclusion: Coiling alone is the most efficient method in terms of the aneurysm occlusion rate. Irregular shape of the aneurysm and posterior orientation of the dome significantly hinder the embolization of aneurysm.

<http://dx.doi.org/10.1016/j.pbj.2017.07.079>

PS097

Antidepressive potential of aqueous extract of common vervain (*V. officinalis* L. Verbenaceae) and molecular docking studies of its main components as potential antidepressive agents



N. Lasica^{1,*}, V. Raicevic²

¹ Department of Pharmacology, Toxicology and Clinical Pharmacology, Faculty of Medicine, University of Novi Sad, Serbia

² Department of Chemistry, Biochemistry and Environmental Protection, Faculty of Sciences, University of Novi Sad, Serbia

E-mail address: nebojsa.lasica@gmail.com
(N. Lasica).

Aim: Assessment of antidepressive effect of aqueous extract (AE) of common vervain and its main constituent – verbascoside and elucidation of underlying mechanism of action.

Introduction: Common vervain is a plant used in traditional medicine. Its AE contains a vast number of compounds, hence its significant pharmacological potential.

The monoamine hypothesis is the central theory of depression, and a majority of conventional antidepressants act on the monoaminergic system.

Methods: Experiments were conducted on Swiss albino sexually mature male mice. There were 6–8 animals in each of 5 subgroups (imipramine; fluoxetine; two different doses of AE – AE I, II; and VS;). Forced Swimming Test (FST) and Tail Suspension Test (TST) were used to assess the antidepressive effect.

Molecular docking experiments were performed using the programme AutoDock 4.2, with 3D structures of crystallized proteins from the PDB database and 3D structures of ligands generated by the software Avogadro 2.0.8.0.

Results: Immobilisation time (IT) in FST after the administration of imipramine was shorter than the control, same as for subgroups treated with AE I, II and VS. In the subgroup treated with fluoxetine, IT in TST was shorter than the control time, and the same was observed in subgroups treated with AE I, II and VS.

Significant binding energies were found for Serotonin Reuptake Transporter (SERT) and verbenalin (–7.20 kcal/mol) and verbasco-side (–6.61 kcal/mol), and for the Leucine Transporter (LeuT), the homologue of the noradrenaline reuptake transporter, and verbenalin (–6.27 kcal/mol) and caffeic acid (–5.85 kcal/mol).

Conclusion: In both pharmacodynamic tests the antidepressive effect of AE and VS has been confirmed. Verbenalin and verbasco-side binding energies and poses in interaction with SERT were similar to those of paroxetine. For LeuT, verbenalin showed both a similar binding energy and pose to that of imipramine, whereas caffeic acid showed only a similar binding energy.^{1–4}

References

1. Abascal K, Yarnell E. Nervine herbs for treating anxiety. *Altern Complement Therap.* 2004;10:309–15.
2. Akanmu MA, Honda K, Inoue S. Hypnotic effects of total aqueous extracts of *Vervain hastata* (Verbenaceae) in rats. *Psychiatry Clin Neurosci.* 2002;56:309–10.
3. Belmaker RH, Galila Agam. Major depressive disorder. *N Engl J Med.* 2008;358:55–68.
4. Makino Y, Kondo S, Nishimura Y, Tsukamoto Y, Huang ZL, Urade Y. Hastatoside and verbenalin are sleep-promoting components in *Verbena officinalis*. *Sleep Biol Rhyth.* 2009;7:211–7.

<http://dx.doi.org/10.1016/j.pbj.2017.07.080>

PS213

Thermal denaturation profiles of proteome and blood serum of rats with drug-induced dementia. A DSC study



N. Nizamova*, S. Abarova, L. Traikov, R. Koynova, B. Tenchov

Dept Medical Physics and Biophysics, Medical University – Sofia, 1431 Sofia, Bulgaria
E-mail address: nezi.nizamova@gmail.com
(N. Nizamova).

Aim: The aim of this study is to evaluate the effect of scopolamine on different brain segments using DSC.

Introduction: In this work, probes from different brain segments of rats with drug-induced dementia were characterized by differential scanning calorimetry (DSC) and their thermodynamic properties were determined.

Methods: Male Wistar rats were injected with scopolamine for 14 consecutive days in order to induce drug model of dementia. After being decapitated, their brains were divided into the following segments: telencephalon, mesencephalon and cerebellum. Afterwards, the brain supernatants of the latter 3 segments were examined by DSC and compared with the controls.

Results: The DSC measurements revealed large differences between the denaturation profiles of rat brain supernatants and blood serum. The thermograms of brain tissues displayed clearly expressed low-temperature exothermic transitions with peaks in the range 35–45 °C which are missing in blood serum samples. There were differences between the thermograms of the separate brain segments as well. The thermodynamic parameters of the denaturation profiles were also determined.

Conclusion: These measurements show that DSC is an appropriate method with great potential for detection and characterization of the changes taking place at molecular level in different tissues, especially in brain tissues affected by neurodegenerative disorders.

Acknowledgements: This research was made with the support of Science Fund at Medical University-Sofia, Bulgaria, Project 8-C/2016 and National Science Fund Project DN03/13/2016.

<http://dx.doi.org/10.1016/j.pbj.2017.07.081>

PS231

Effects of Vitamin D on the expression of markers of principal neurons, interneurons and astrocytes in cerebral cortex and hippocampus in gerbils exposed to transient global cerebral ischemia



M. Malinic*, G. Jevtic Dozudic

Institute of Clinical and Medical Biochemistry, Faculty of Medicine, University of Belgrade
E-mail address: marija.malinic@gmail.com
(M. Malinic).

Aim: Examination of the effects of vitamin D pretreatment on the expression of markers of principal neurons (NeuN), inhibitory interneurons (PV) and astrocytes (GFAP) in cerebral cortex and hippocampus in gerbils who were exposed to transient global cerebral ischemia.

Introduction: Brain ischemia may cause serious damage to the cells in the central nervous system. Vitamin D has an important role in brain injury treatment due to its neuroprotective effects.

Methods: Gerbils were divided in 5 groups: control group; two groups that underwent ischemia and then reperfusion for three (I/R3d) and seven days (I/R7d) and two groups that were treated with vitamin D before I/R (vitD + I/R3d and vitD + I/R7d). Complete blood supply to the brain was cut off for 10 minutes and reperfusion lasted 3 and 7 days. They were daily treated with vitamin D for 7 days prior ischemia. Expression of proteins was detected using Western blot.

Results: No changes were detected in expression of NeuN markers in cortex of experimental groups, while there was increase in expression in hippocampus in groups I/R7d and vitD + I/R7d in comparison to the control group and group vitD + I/R3d. Expression of PV in cortex was significantly reduced in group I/R7d in comparison to group I/R3d, whereas in hippocampus the expression was significantly higher in group vitD + I/R3d than in group I/R3d. Expression of GFAP has significantly risen in all groups in comparison to the control group whereas in hippocampus there was a rise in groups vitD + I/R3d, I/R7d and vitD + I/R7d in comparison to the control group. There was also a rise of GFAP expression in groups treated with vitamin D (vitD + I/R3d and vitD + I/R7d) in comparison to those that have not been treated (I/R3d, I/R7d).

Conclusion: Vitamin D has positive effect on astrocytes in both structures of gerbils that underwent global cerebral ischemia, especially in hippocampal region.

<http://dx.doi.org/10.1016/j.pbj.2017.07.082>

PS238

Identification of genetic modifiers of somatic CAG instability in Huntington's Disease by in vivo CRISPR – Cas9 genome editing



A. Azevedo^{1,2}, M. Kovalenko², M. Andrew², F. Zhang³, J. Lee^{2,4}, V. Wheeler^{2,4}, R. Mouro Pinto^{2,4,*}

¹ University of Porto

² Center for Genomic Medicine, Massachusetts General Hospital