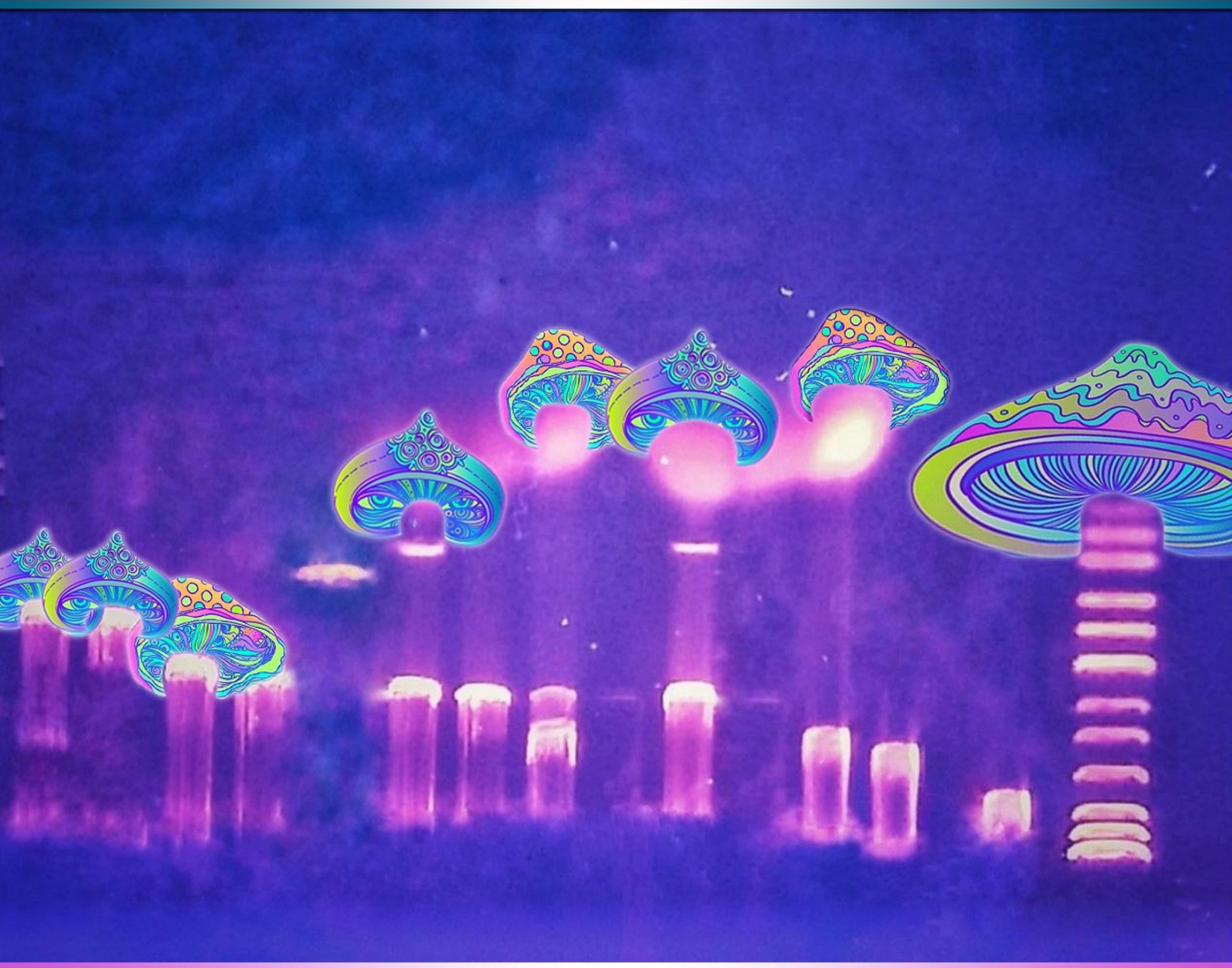
Cedars Sinai

RECOOP HST ASSOCIATION

20th Bridges in Life Sciences Conference
20th Science and Art Exhibition
April 2-3, 2025



Prague, Czech Republic

20th RECOOP Bridges in Life Sciences Conference

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20th RECOOP Bridges in Life Sciences Conference

8:30 – 9:00 Registration

9:00 – 9:30 Opening
Robert Gaspar, President of the RECOOP HST Association
& Albert Szent-Györgyi Medical School, University of Szeged, Hungary

My algorithm at Cedars-RECOOP: 35, 25, 20, and 10
Sandor G. Vari, Cedars-Sinai Medical Center, Los Angeles, CA, USA

9:30 – 10:40 Neurodegenerative Diseases (NDD)
Session Chairs ***Marija Heffer***
Tatiana Borisova

Spontaneous ROS generation in the presynaptic brain nerve terminals during combined application of cadmium and smoke PM preparations
Marina Dudarenko, Palladin Institute of Biochemistry NAS of Ukraine, Kyiv, Ukraine

Salivary biomarkers in dementia
Enikő Gebri, University of Debrecen, Debrecen, Hungary

Analysis of serum N-glycosylation in dementia
Anna Farkas, University of Debrecen, Debrecen, Hungary

The effect of N-stearoylethanolamine on blood PPARγ, cytokines levels and fatty acid composition of brain structures in aged rats with chronic inflammation
Oksana Tkachenko, Palladin Institute of Biochemistry NAS of Ukraine, Kyiv, Ukraine

Post-traumatic stress disorder (PTSD) symptoms and glycan age
Viktoria Čurila, J. J. Strossmayer University of Osijek, Osijek, Croatia

Resveratrol analogues restore neuronal insulin signaling in a structure-dependent manner in streptozotocin-treated SH-SY5Y cells
Kamilla Varga, Semmelweis University, Budapest, Hungary

Cerebral organoids – a complex three-dimensional cellular model to study brain development in Down Syndrome
Ana Bekavac, University of Zagreb School of Medicine, Zagreb, Croatia

Discussion: 15 minutes

10:40 – 11:00 Coffee Break & 10th Science and Art Exhibition

The Effect of N-stearoylethanolamine on Blood PPARγ, Cytokines Levels and Fatty Acid Composition of Brain Structures in Aged Rats with Chronic Inflammation

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Keywords: neuroinflammation, fatty acids, PPARγ, cytokines, N-stearoylethanolamine

Introduction. As the percentage of older people in the total population of developed countries increases, the need to improve their quality-of-life increases. With age, the risk of inflammatory processes increases, provoking pathological changes in many systems and organs, including a heightened risk of neurodegenerative diseases. It has previously been shown that saturated N-acylethanolamines, particularly N-stearoylethanolamine, have anti-inflammatory properties.
Aim. Our study aimed to investigate changes in the content of nuclear receptors PPARγ and proinflammatory cytokines (IL-12, TNF-α) in the blood and the fatty (FA) acid composition of brain tissues of aged rats with induced chronic inflammation and to evaluate the effect of N-stearoylethanolamine (NSE).
Methods. The study was conducted on 18-month-old rats. Chronic low-grade inflammation was induced by intraperitoneal injection of lipopolysaccharide (LPS) from *Escherichia coli* at a dose of 250 mg/kg body weight once a week (total of 7 injections). NSE was administered *per os*, at a dose of 50 mg/kg body weight, daily for 10 days. The PPARγ, TNFα and IL-12 content in rats' blood was determined by immunoenzymatic analysis using the commercial ELISA kits. The FA content in the rat brain's hippocampus and frontal cortex was determined using gas chromatography with mass detection. Experimental data were processed statistically using Student's T-test ($p<0.05$).
Results. The development of chronic LPS-induced inflammation in rats was accompanied by a slight but statistically significant increase in PPARγ in the blood plasma, which may indicate a reduced content of their endogenous ligands. When NSE (PPARγ ligand) was administered to rats while modeling chronic inflammation, the PPARγ content remained at the level of a control group. Growth in plasma TNFα and serum IL-12 levels was also found in LPS-rats. The NSE administration to rats during inducing inflammation prevented the increase in TNFα and IL-12 content. The development of chronic inflammation led to a considerable increase in the total FA content in the hippocampus and a decrease in the frontal cortex. A significant reduction in the content of arachidonic acid (ω-6) and growth of docosahexaenoic acid (ω-3) level in the hippocampus was found, which may indicate the intensive involvement of arachidonic acid for the synthesis of proinflammatory mediators. In contrast, a significant decrease in the content of both arachidonic and docosahexaenoic acids was found in the frontal cortex, indicating a chronic course of inflammation, particularly neuroinflammation. Using NSE prevented inflammatory-induced changes in the FA profile of investigated brain tissues.
Conclusions. The results indicate that using NSE in rats during the modeling of the LPS-induced chronic inflammatory process exhibited a pronounced anti-inflammatory effect and prevented the development of chronic inflammation.
Source. This work was funded by the National Academy of Sciences of Ukraine, projects N 0119U002510 and N 0117U004344.
Ethical Committee Approval: The ethical committee of the Palladin Institute of Biochemistry of NAS of Ukraine approved the study, protocol N9, 19.11.2024.
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