Конференція молодих науковців
«Актуальні проблеми біохімії та біотехнології – 2026»

Київ 21 травня, 2026

Інститут біохімії ім. О.В. Палладіна
Національної академії наук України

UDC 577.115: [616-002.2: 615.276]: 57.084

EFFECT OF N-STEAROYLETHANOLAMINE ON THE FATTY ACID COMPOSITION OF BLOOD PLASMA IN RATS WITH IMIQUIMOD-INDUCED PSORIASIS-LIKE INFLAMMATION

K. IBRAHIMOV, O. TKACHENKO, T. HORIDKO, H. KOSIAKOVA, O. ZHUKOV

Palladin Institute of Biochemistry of NAS of Ukraine, Kyiv, Ukraine.
E-mail: kyamilibragimov@gmail.com.com

Keywords. inflammation, psoriasis, endocannabinoids, N-stearoyletanolamine, fatty acids

Introduction. Inflammation is currently considered an integral part of the pathogenesis of many diseases and is viewed as a central link in the pathogenesis of psoriasis. Studies of the effects of N-stearoylethanolamine (NSE) in experimental models of different pathological conditions have demonstrated its anti-inflammatory properties, mediated by indirect influence on reducing key pro-inflammatory cytokines (IL-1β, TNF-α), which in turn indicates inhibition of the pro-inflammatory phase of inflammation.

Aim. The aim of our study was to determine the effect of NSE on the fatty acid composition of the blood plasma of rats with imiquimod-induced psoriasis-like inflammation.

Methods. The model of psoriasis-like inflammation was reproduced in male Wistar rats (n = 30) over 15 days of exposure to 125 mg of imiquimod applied to a pre-prepared area of the rats' skin. The rats were divided into 6 groups (control, IMQ-7, IMQ-11, IMQ-15, NSE-11, NSE-15). Beginning on day 7, the NSE-11 and NSE-15 groups received an application of an aqueous suspension of NSE to the area with psoriasis-like inflammation at a dose of 1 mg/0.3 ml per rat, while the application of imiquimod was continued in parallel. The animals were euthanized by decapitation under CO_2 anesthesia, and blood plasma was collected for further analysis. Fatty acids were determined using a GC7890 Agilent gas chromatograph (Agilent Technologies, USA) equipped with an Agilent 8987 mass detector and an HP-5MS capillary column (30 m × 250 μm × 0.25 μm), with helium as the carrier gas. Statistical analysis was performed using Student's t-test ($P < 0.05$).

Results. The development of psoriasis-like inflammation induced by imiquimod exposure was accompanied by changes in the fatty acid composition of rat blood plasma, particularly in the ω-6/ω-3 polyunsaturated fatty acid (FA) ratio. It was noted that on day 7 there was a significant decrease in both the total fatty acid profile and the concentrations of saturated and unsaturated fatty acids, as well as a decrease in the ω-6/ω-3 FA ratio, which indicates activation of the pro-inflammatory phase of inflammation caused by imiquimod exposure. Similar fluctuations in fatty acid composition were also observed on days 11 and 15 of exposure. In the group of rats that received NSE, normalization of the main fatty acid components and of the ω-6/ω-3 FA ratio in blood plasma was observed on day 15 of imiquimod exposure.

Conclusions. The experimental data indicate that the administration of NSE to rats with imiquimod-induced psoriasis-like inflammation helps restore the fatty acid composition and the ω-6/ω-3 polyunsaturated fatty acid ratio in blood plasma, and thus may act as a constellation factor in initiating the resolution phase of inflammation.

Funding source. This work was funded by the National Academy of Sciences of Ukraine, projects № 0124U000342.

Acknowledgment. The authors thank Prof. N. Hula for the provided advisory assistance.