

**THE INFLUENCE OF N-ACYLETHANOLAMINE  
ON MITOCHONDRIAL AND MICROSOMAL ELECTRON  
TRANSFER OF ADRENAL CORTEX TISSUE  
AND EFFECT OF N-ACYLETHANOLAMINE  
ON STEROIDOGENESIS IN THE ADRENAL GLAND  
*IN VITRO* UNDER ADRENOCORTICOTROPIC  
HORMONE STIMULATION**

*Zhukov O. D., Artamonov M. V., Gula N. M., Mikosha A. S., Storozhuk L. M.*

*Palladin Institute of Biochemistry, National Academy of Sciences of Ukraine,  
9 Leontovych St., 01601 Kyiv, Ukraine  
e-mail: zhukov@biochem.kiev.ua*

It is well known that N-acylethanolamines (NAEs) are synthesised as a response of a cell to some damage effects, such as toxicity, ischemia development, stress state of tissue etc. and they reveal membrane-protective and antioxidant properties. On the other hand, the adrenal cortex is the tissue which plays the main role in the organism response to a stress. We have recently shown that some NAEs possess large affinity for the adrenal tissue and can modulate steroidogenesis. NAE can affect the steroidogenesis by the influence on the stimulating action of adrenocorticotropic hormone during its binding with the receptors on the adrenocorticyte membrane. Besides, steroidogenesis requires the great number of reducing equivalents in the form of NADPH, and activation of respiratory chain is essential for cholesterol transformation during steroidogenesis. So, we investigated the NAE effect on the NADPH-dependent reductase activity in the mitochondrial and microsomal fractions of piglet adrenal cortex tissue. The NAE influence on the steroidogenesis in the rat adrenal cortex during the ACTH stimulation *in vitro* was also studied.

As a result of our work we have analysed two possible places of NAE action on the adrenal cortex function. Thus, NAE did not affect the electron transfer chain of mitochondrial and microsomal fractions of the piglet adrenal cortex. This fact does not contradict the data of changing steroidogenesis under NAE action because the electron transfer is not a limiting stage for it. The second part of the work was dedicated to the investigation of the NAE action on the steroidogenesis *in vitro* under ACTH stimulation. The results show that NAE at certain concentrations were able to reduce the stimulation. This fact permits us to discuss the NAE participation in liganding ACTH with its receptors. Taken together our results show that NAEs have more than one place of action on the adrenal cortex function and their influence on it is ambiguous.

The work was supported by the grant of Ministry of Education and Sciences of Ukraine N F7/353-2001 05.07/00017.