

## **GABAA PATHWAYS IN BREATHING REGULATION DURING HYPOXIA IN AGING RATS**

Kolesnikova E. E.

Bogomoletz Institute of Physiology, Bogomoletz St. 4, 01024 Kiev, Ukraine, dr\_kolesnikova@ukr.net

Aging leads to the changes in respiratory sensitivity and output to hypoxia which could be determined by neurochemical modifications involving structural proteins, neurotransmitters and related receptors, in particular, GABA<sub>A</sub> pathways. We studied GABA<sub>A</sub> receptors involvement in the formation of diaphragmatic EMG-activity in response to acute hypoxia in aging. Two groups of rats were examined (6 and 24 months, n=10 each, YR and OR, correspondently). Time-volume parameters of ventilation were estimated according to diaphragmatic EMG-activity - DEMGA (the amplitude (A) of EMG-activity; frequency of EMG-activity (f), minute diaphragmatic EMG output (MDO) which was recorded under hypoxic loading (HIP, 12% O<sub>2</sub>) during 2,5 min intervals. The involvement of GABA<sub>A</sub> receptors in the breathing in aged animals was tested by GABA<sub>A</sub> blocker, bicuculline (BC, 0,3 mg/kg i.v.). It was found that aging was accompanied by significantly decreased DEMGA under HIP. BC contributed to the rise in DEMGA in HIP in both groups. Thus, in YR peak significance of f was increased by 169% (p<0.05), whereas in OR f was enhanced only on 34% (p<0.05). Obviously, it was necessary to note more expressed reaction on hypoxic of A component in the peak after BC injection in OR vs. YR (124% and 89%, respectively) and the shift in DEMGA maximum to an earlier period. Moreover, in this case A significances of OR were limitlessly close to correspondent DEMGA of YR. After GABA<sub>A</sub> receptors blocking in YR the peak of MDO rose on 137% (p<0.05) vs. 50% (p<0.05) in OR keeping the difference in the forming DEMGA.