Evaluation of acetyl-L-carnitine biological effect at irradiation EMR (1800 MHz) of male rats

Alena V. Tsukanava¹, Ihar A. Cheshyk², Natalia N. Veyalkina¹

¹*Laboratory of Experimental Biological Models, Institute of Radiobiology of the National Academy of Sciences of Belarus, Belarus,* ²*Institute of Radiobiology of the National Academy of Sciences of Belarus, Belarus*

Objective. To evaluate the biological effects of acetyl-L-carnitine (ALCAR) on the parameters of programmed death sperm cells of male rats irradiated EMR (1800 MHz).

Model. In experiment were used male rats (line Wistar) at the age of 1.5 months. Animals received ALCAR (7 mg/kg; 3 times in week) during period of EMR exposure (30 days) in the range of mobile communications 1800 MHz. Material was taken on the 1st and 30th days after exposure.

Experimental groups. Each group consisted of 8 animals:

Negative control (group 1);

Positive control: animals EMR exposed (group 2);

ALCAR: animals EMR exposed and received ALCAR (group 3).

Studied indicators. Early apoptosis; late apoptosis and necrosis of spermatozoa. The method of flow-cytometry was performed using Annexin V-FITC and Propidium iodide.

Equipment. Beckman Coulter FC 500 cytometer.

Results. In group 3 on the 1st day after exposure marked increase (almost in 2 times when compared to the 2 gr.) number of cells departed in the early phase of apoptosis. In the phase of late apoptosis observed decrease (62.50 % when compared to the 2 gr.). On the 30th day indicators of early and late apoptosis have lower values (39.77 % and 30.88 % respectively). The number of necrotic spermatozoa varies within 5% when compared to the positive control on the 1st and 30th day.

Conclusions. ALCAR influence on the apoptotic spermatozoa especially on the late stage of apoptosis. This medicament can be recommended for further study for the restoration of the reproductive system body at irradiation EMR (1800 MHz).