THE DETERMINATION OF ACUTE TOXICITY OF BACTERIAL ENDOTOXINS

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The source of bacterial endotoxins (ВЕ) in macro-organisms can be saprophytic and also pathogenic aerobic and anaerobic gram-negative bacterias of the gastrointestinal tract and inflammation foci. Bacterial endotoxins in low concentrations activates the synthesis of interleukins and interferons, which provides non-specific resistance.

In normal conditions the circulatory system gets a small amount of BE, which in portal vein bind with Kupffer Cells, macrophages, erythrocytes, lipoproteins and other plasma proteins and detoxification take place in hepatocytes. When in a circulatory system is the significant concentrations of BE there appear the phenomenon, that was called "endotoxin aggression". It is pathological process that caused by excess BE in circulatory system and transformed into that or other disease, depending on genetic or acquired predisposition.

Given this, very important is the determination of toxicological characteristics of bacterial endotoxins. The aim of the work was to determine the parameters of the acute toxicity of bacterial endotoxin of gram-negative microorganism, in particular Escherichia coli, Yersinia enterocolitica and Klebsiella oxytoeca.

To determine the DL50 of endotoxin E. coli, Y. enterocolitica and K. oxytoeca used BE of field strains of microorganism. Calculation of LD50 for toxins was conducted by G. Kerber using the immediate results of the experiment.

The conducted tests showed that the first clinical signs of endotoxemia in white mice appeared after 6-8 hours after administration of endotoxin. The degree of manifestation dependent on the action of endotoxins in certain doses and of the type of microorganisms. In particular, by the definition LD50 of endotoxin of E. coli we noted the death of all animals in group № V in the first day after administration from the concentration of 5,0 mg/kg, in the IV experimental group on the first day was lost three animals, and on the second - one. In the third group within first two days was lost two animal, in the second experimental group on the second day was lost only one animal, in the further deaths of animals were not observed. After administration of endotoxin in concentration 2,0 mg/kg body weight was set that during 14 days of...
observation all animals stayed alive. By the introduction endotoxin *E. coli* in concentrations: 2,0, 3,0, 4,0, 4,5 and 5,0 mg/kg was set that LD$_{50}$ concentration is the of 4 mg/kg.

By the determination of acute toxicity of *Y. enterocolitica*, all animals were lost on the first day after administration endotoxin in dose 4,0 mg/kg body weight. In the IV and III experimental groups, which were administered endotoxin in doses of 3,5, 3,0 mg/kg in the first day were lost, respectively, four and two animals in the second group on the second day was lost only one animal, in the future of animal deaths were not observed. After administration of endotoxin in dose 2,0 mg/kg body weight we found out that during 14 days of observation all animals stay alive. By the introduction endotoxin *Y. enterocolitica* in concentrations: 2,0, 2,5, 3,0 3,5 and 4,0 mg/kg was set that LD$_{50}$ concentration is 3,3 mg/kg.

By the introduction endotoxin *K. oxytoca* on the first day endotoxin in concentration 8,0 mg/kg body weight, caused the death of all animals, in the experimental group IV on the first two days was lost four animals, in the third group - one animal. In the second experimental group was set that on the second day was lost only one animal, in the further deaths of animals were not observed. We found out that after introduction endotoxin in dose 4,0 mg/kg body weight, during 14 days observations all animals stayed alive.

**Keywords:** BACTERIAL ENDOTOXIN, ACUTE TOXICITY, WHITE MOUSE, MICROORGANISMS, CONCENTRATION.