

BACTERIAL TOXIN DETECTION BY USE OF BOMBYX MORI HAEMOLYMPH

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Modern aspects of application of various vital forms of silkworm in medical practice are studied and the basic directions of their further use are determined. The object has chosen for the future scientific researches – the caterpillar of silkworm and the complex application model has developed for medicines for prophylaxis, diagnostic and treatment.

Host cells stimulation by excessive amount of bacteria and their fragments in the blood is considered nowadays are starting mechanism of bacterial meningitis. Lypopolysaccharid is the most active and studied fragment for Gram negative bacteria's, peptidoglycane – for Gram positive bacteria's.

These compounds are fractions of cell walls of respective bacteria's; peptidoglycane is common component for both Gram negative and Gram positive bacteria's. Unfortunately, clinical practice today does not have available methods of laboratory diagnostics of bacterial modulines. Highly sensitive reaction with amoebocyte lysate of *Limulus* genus crabs is not only expensive, but insufficiently specific (interacts only with lypopolysaccharid).

The method of bacterial toxin detection using *Bombyx mori* haemolymph suggested by Japanese scientists in 2003 is known in world practice. The test is based on the cascade of reactions in *Bombyx mori* haemolymph caused by peptidoglycane or (1, 3)- β -D-glucane, which are the components of Gram negative and Gram positive bacteria's cell wall.

The basic ferment of this cascade – prophenol – oxidase catalyzes the reaction of conversion exogenic substrate 3,4- dihydroxyphenylalanine into melanine. Ferment activity is proportional to the concentration of bacterial endotoxines. We have tested this method in patients with generalized form of meningococcal infection.

The patients were divided into two groups: 1 group (10 patients) – meningococcal meningitis with severe course confirmed bacteriologically and molecularly-genetically; 2 group (10 people) – patients with intact liquor (group of control). Liquor samples (0,5 ml) were taken from patients on admission to the hospital by routine diagnostic spinal puncture. Disposable puncture needles and sterile apyrogenic disposable test tubes were used in order to prevent false-positive results.

The obtained results of the study have shown that peptidoglycane level in cerebrospinal liquor in patients with meningococcal meningitis at the height of disease was significantly higher than in control group ($p < 0,05$). Further, during convalescence the indices dropped to the normal. Consequently, the test can be used for intoxication level evaluation.