ANTIIDIOTYPIC ANTIBODIES AND THEIR F(AB)2 FRAGMENTS AS INDUCERS OF THE IMMUNE RESPONSE AGAINST THE LIPOPOLYSACCHARIDE ANTIGEN OF BRUCELLA

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The efficiency of the antiidiotypic antibodies (the 2nd antibodies) use for studying of the immune response regulation mechanisms and for elaboration of vaccines and diagnostic products for various diseases is noted by many researchers (Osipova L.P, Pivovarova, M.P. et al., 2003; Fagiolo E. 2003; Perosa Federico, Favoino Elvira, C. M. Antonietta, Dumamacco Franco, 2004; Frantseva I.A., Imanbekova J.A, France A.P, Baisheva S. A et al. 2008, etc.).

The aim of our work is the determination of the possibility of using a monoclonal antiidiotypic antibodies as an immunochemical «internal image» of Brucella antigen.

The hybrid cells strain producing the monoclonal antiidiotypic antibodies to specific immunoglobulins (the 2st antibodies) against Brucella antigen was obtained. (Pat. 2009 / 0083.1 Republic of Kazakhstan. The hybrid cells strain Mus. musculus L. is used to obtain monoclonal antiidiotypic antibodies to immunoglobulins against Brucella antigen / Ospanova S.G, Bulashev A.K, Serikova Sh., Suranshiev ZH. A., Eskendirova S.Z., Shenzhanov K.T., the applicant and patentee of "KATU after S. Seifullin». - №68706; 2011).

The immunochemical properties of the monoclonal antiidiotypic antibodies produced by this strain and of their F(ab)2 fragments were determined in indirect, direct and competitive ELISA.
The results of this research showed that they interact with the xenogenic rabbit and cattle antisera to the lipopolysaccharide antigen of Brucella abortus. In the competitive ELISA antiidiotypic antibodies inhibit the binding of lipopolysaccharide antigen with the positive antisera.

The commercial microrotary chromatographic columns of «Thermo Scientific» (USA) company were used for obtain F(ab)2 fragments of the monoclonal antiidiotypic antibodies.

The actual direction of modern immunology and biotechnology is the research of anti-idiotypic antibodies as the biological basis for the elaboration of protective drugs (V. A. Fedorov, Devdariani Z.L 2006; Wei Li, Heng Cui, Fan-Qiang Meng, Xiao-Hong Chang and Guo Zhang, et al., 2008; Diaz Y., Gonzalez A., Lopez A., Perez R. and Vazquez AM, et al., 2009; Hilmar Lemke, Radu I. Tanasa, Ahmad Trad and Hans Lange, 2012, etc.).

To determine the protective properties, the monoclonal antiidiotypic antibodies and their F(ab)2 fragments were used for preparation of the antiidiotypic sera of the third generation.

BALB/c mice were injected on the 1st, 7th, 11, 12, 13th days with monoclonal antiidiotypic antibodies and their F(ab)2 fragments intraperitoneally, 50 and 100 microgram per animal. At the first time the immunization was performed with the Freund's complete adjuvant, the second one was injected with the incomplete Freund's adjuvant.

The first screening of the immune sera was performed 3 days after the last immunization. The results are presented in the Table 1.

Table 1 - The titer of the antibodies in the experimental sera

Immunogen	Dose, microgram	The titer of the antibodies
The lipopolysaccharide antigen of Brucella abortus as the positive rate of control	100	1:12800
The monoclonal antiidiotypic antibodies	100	1:3200
The monoclonal antiidiotypic antibodies	50	1:6400
F(ab)2 fragments of the monoclonal antiidiotypic antibodies	100	1:800
F(ab)2 fragments of the monoclonal antiidiotypic antibodies	50	1:3200

According to the Table 1, the monoclonal antiidiotypic antibodies and their F(ab)2 fragments induced in mice high level of specific antibodies, although the their titers were lower in comparison with lipopolysaccharide antigen. The optimal dose was 50 microgram.