ENHANCED CHEMILUMINESCENT ENZYME-LINKED IMMUNOSORBENT ASSAY FOR DETECTION OF ANTIBODIES AGAINST BABAESIA MICROTI

Technology Summary

Human babesiosis is caused by an intraerythrocytic protozoan parasite which infects red blood cells. The most common Babesia species found in the United States is *Babesia microti* transmitted via the deer tick, *Ixodes scapularis* to humans and its natural host, white-footed mice. Most cases of human babesiosis in healthy individuals are asymptomatic but the disease can be fatal in the elderly, immunocompromised, and asplenic individuals. Babesiosis can additionally be transmitted by transfusion of blood and blood products collected from infected donors. There is no standardized testing of babesiosis in the U.S. and transfusion-transmitted babesiosis (TTB) is a major blood safety concern.

A highly sensitive and specific Enhanced Chemiluminescence Enzyme Linked Immunosorbent Assay (ECL-Bm ELISA) for detection of *B. microti* antibodies in human plasma/serum samples has been developed that utilizes a combination of three novel *B. microti* molecules as plate coating antigens [*B. microti* Serine Repeat Antigen (BmSERA), *B. microti* Maltese Cross Form Related Protein (BmMCFRP), *B. microti* Piroplasma β-strand domain (BmPiβS)]. These antigens were identified by the genome-wide immuno-screening of a *B. microti* cDNA phage display library against a pool of human sera from babesiosis patients. These antigens have shown reactivity against babesiosis patient sera: BmSERA: 93%; BmMCFRP: 75%; and BmPiβS: 73%. A combination of these three antigens recognized 27/28 (96%) of babesiosis positive and 0 of 15 (0%) babesiosis negative serum samples.

Potential Commercial Applications

- Babesia testing in donor blood

Competitive Advantages

- high sensitivity (96%)
- specificity (100%)
- amenable to high throughput (recombinant proteins antigen)
- suitable for donor on site screening (ELISA)

Development Stage: Early development

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Intellectual Property:

- PRV 62/580588 – 11/1/2017

Publications:


Product Area: Diagnostic, Screening Tool, *Babesia microti*

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