

## **Anti-Human Heat shock Protein 70-kd (HSP-70) Ab, IgG**

**Clinical Utilities:** Autoimmune inner ear disease (AIED) is a heterogeneous group of diseases with regard to clinical presentation and immunoreactivity to inner ear components. They include rapidly progressive sensorineural hearing loss (SNHL), Menière's disease (MD), and sudden deafness (SD).

Animals that were immunized with HSP-70 and have elevated anti-HSP-70 antibodies did not develop hearing loss. Nevertheless, numerous studies have shown that patients with AIED had anti-HSP-70 antibody. A recent study shows that the EIA method for detection of anti-HSP-70 antibody has higher specificity, sensitivity and less false positive and false negative than Immunoblotting. RDL has developed a new EIA anti-Human HSP-70 antibody assay. This data indicates that the presence of circulating antibodies to HSP-70-kd serves as a marker for the diagnosis of AIED.

## **Anti-Inner Ear Membrane Ab, IgG**

**Clinical Utilities:** Autoimmune inner ear disease (AIED) is a heterogeneous group of diseases with regard to clinical presentation and immunoreactivity to inner ear components. They include rapidly progressive sensorineural hearing loss (SNHL), Meniere's disease (MD), and sudden deafness (SD). The search for a diagnostic test led to the finding that most AIED patients had antibodies that react with 130-kd, 68-kd, 58-kd, 42-kd and 30-kd (PD) proteins from human and bovine ears. The presence of antibodies to a 68-kd antigen, identified by Western blot, has been the best candidate to date as a diagnostic test for AIED and may be useful in predicting steroid responsiveness in the patient population. Moreover, reactivity with the 68-kd protein was present in serum samples from 89% of 47 patients with active disease compared to none of 25 patients with inactive disease. Of the 36 patients with a positive test result on Western blot assay for antibodies to the 68-kd protein, 27 (75%) responded to steroid therapy. Only four (18%) of the 22 patients with a negative test result responded to steroid therapy. A recent study showed a positive reaction to PD (from guinea pig inner ear extraction) in all

bilateral MD and bilateral sudden hearing loss patients and indicates these pathologies are the result of an ongoing autoimmune process directed against specific inner ear antigens.

The 68-kd inner ear antigen identified by Ramakrishnam is not HSP-70. The 68-kd protein binds supporting cells in the organ of Corti, while HSP-70 antibody does not bind to any site in the inner ear. Also, the commercial recombinant HSP-70 could not bind to sera from patients with AIED.

This data indicates that the presence of circulating antibodies to human or bovine inner ear extract serves as a useful marker for the diagnosis of AIED and that its presence correlates with disease activity and responsiveness to corticosteroid treatment. RDL has developed a new EIA anti-Bovine Inner Ear Membrane antibody assay including 130-kd, 68-kd, 42-kd and 30-kd (PO) antibodies.