



## ALPHA-MYOSIN

### FUNCTION:

Myosin, the major contractile protein, converts chemical energy into mechanical force through hydrolysis of ATP.  $\alpha$ -Myosin is almost exclusively expressed in cardiac tissue.

### ANTIBODIES APPEAR:

Autoimmune Myocarditis<sup>3</sup>  
Dilated Cardiomyopathy<sup>3</sup>  
Myasthenia Gravis<sup>5</sup>  
Rheumatic Heart Disease<sup>2</sup>

### KNOWN CROSS-REACTIONS:

Group A *Streptococcus pyogenes*,  
Striated Muscle<sup>5</sup>

### CLINICAL SIGNIFICANCE:

As suggested in an experimental assay,<sup>1</sup> in which anti-myosin antibodies caused an increased calcium uptake and retention, leading to myocyte dysfunction and possibly cell death, anti-myosin antibodies may be detrimental to cardiac function. However, elevated antibodies to  $\alpha$ -Myosin have been found in dilated cardiomyopathy pedigrees with both familial and non-familial disease, and thus do not support the concept of playing a primary pathogenic role.<sup>4</sup> These antibodies are more likely to be used as a marker for predisposition.<sup>3</sup> A high percentage of asymptomatic relatives of patients with dilated cardiomyopathy also have elevated antibodies to myosin-alpha<sup>3</sup> and should be monitored for early signs of autoimmune myocarditis. Due to cross reactivity, patients with Rheumatic Fever or Myasthenia Gravis should be assessed for autoimmune myocarditis.

### References:

1. Bick RJJ, et al. Effects of IgM from rheumatic fever patients on intracellular calcium levels of neonatal rat cardiac myocytes. *Life Sci*, 2003; 73:2101-2111.
2. Faé KC, et al. Mimicry in recognition of cardiac myosin peptides by heart-intralesional T cell clones from rheumatic heart disease. *J Immunol*, 2006; 176:5662-5670.
3. Goldman JH, et al. Autoimmunity to  $\alpha$  myosin in a subset of patients with idiopathic dilated cardiomyopathy. *Br Heart J*, 1995; 75:598-603.
4. Herskowitz A, et al. Concepts of autoimmunity applied to dilated cardiomyopathy. *J Am Coll Cardiol*, 1993; 22:1385-1388.
5. Williams CL, et al. Serum antibodies and monoclonal antibodies secreted by thymic B-cell clones from patients with Myasthenia Gravis define striational antigens. *Ann N Y Acad Sci*, 1987; 505(1):168-179.