



Product Data Sheet

□ Cat # RP-627 Recombinant purified Mycobacterium Tuberculosis Heat Shock Protein 65 (hsp65/groEL-2/Cpn60-2) **Size:** 10 ug

Tuberculosis, MTB, or TB (short for tubercle bacillus) is a common, and in many cases lethal, infectious disease caused by various strains of mycobacteria, usually *Mycobacterium tuberculosis*. The infectious agents of tuberculosis are acid-resistant rod-like bacteria of the family Mycobacteriaceae, genus *Mycobacterium*. Tuberculosis typically attacks the lungs, but can also affect other parts of the body. It is spread through the air when people who have an active TB infection cough, sneeze, or otherwise transmit their saliva through the air. Individuals with HIV are at risk for infection by tuberculosis due to their impaired immune system. The only currently available vaccine as of 2012 is bacillus Calmette–Guérin (BCG with live attenuated bacteria) which, while it is effective against disseminated disease in childhood, confers inconsistent protection against contracting pulmonary TB. Nevertheless, it is the most widely used vaccine worldwide, with more than 90% of all children being vaccinated. A number of new TB vaccines are currently in phase I and II clinical trials. MVA85A (modified vaccinia Ankara 85A, Oxford University) is a subunit vaccine to BCG. This vaccine produces higher levels of long-lasting cellular immunity when used together with the old TB vaccine called BCG. It uses the attenuated MVA as a vaccine delivery platform to present antigen 85A to the immune system.

The closely related proteins of the antigen 85 complex, initially identified in *Mycobacterium bovis* BCG by crossed immunoelectrophoresis, are major secreted products of mycobacteria growing in synthetic media. Three closely related components, termed antigens 85A, 85B, and 85C, have been demonstrated in *M. bovis* BCG and *M. tuberculosis*. Although the antigens are genetically distinct, they are highly homologous and cross-react with polyclonal and monoclonal antibodies raised against individual components. The genes encoding antigen 85A, a 32-kDa protein also referred to as P32, have been cloned from *M. bovis* BCG and *M. tuberculosis*, while genes for 85B, a 30- to 31-kDa protein variously termed MPB59 or alpha antigen, have been isolated from *M. bovis* BCG, *Mycobacterium kansasii*, and *Mycobacterium leprae*. Sequence analysis revealed 85% identity between the *M. bovis* BCG 85A and 85B components in the amino acid sequence of the mature secreted proteins. Many mycobacterial antigens have been identified, such as 71, 65, 38, 23, 19, 16, 14 and 12-kDa proteins. The 38-kDa protein is an immunodominant lipoprotein antigen isolated as a component of antigen 5 by affinity chromatography, and is specific only for the *M. tuberculosis* complex. It is the most extensively studied antigen. The 16-kDa antigen is an immunodominant antigen, frequently called 14 kDa, related to the family of low molecular weight heat-shock proteins. This antigen contains B-cell epitopes specific for the *M. tuberculosis* complex.

Heat shock proteins induce pro-inflammatory cytokines. Mycobacterial HSPs participate in cytokine expression resulting from infection by *M. tuberculosis*. Furthermore, HSPs stabilize cellular proteins in response to various sources of stress or injury.

DnaK, originally identified for its DNA replication by bacteriophage I in *E. coli* is the bacterial hsp70 chaperone. This protein is involved in the folding and assembly of newly synthesized polypeptide chains and in preventing the aggregation of stress-denatured proteins. HSPs may enhance cross-processing by cytosolic or vacuolar mechanisms. Some researchers suggest that endocytosed mammalian HSPs enhance processing by vacuolar mechanisms, and in some cases such processing is TAP independent. Recombinant HSP fusion proteins (with antigenic sequences fused to the N or C terminus of the HSP) have been shown to elicit CD8, T cell and Ab responses.

**Synonyms:**

Protein Cpn60-2, groEL protein-2, 65 kDa antigen, Heat shock protein 65, Cell wall protein A, Antigen A, groL2, groEL-2..

**Source & Storage**

hsp65 was expressed and purified from *Escherichia Coli* (95%, 57.4 kDa, His-tag at NT). It is supplied in a buffer containing 10mM Na-phosphate pH-7.4, 130mM NaCl and 2.5mM KCl or lyophilized in the same buffer (or

see lot sp. conc on the vial). Reconstitute the lyophilized HSP-65 in water at not less than 100µg/ml, which can then be further diluted to other aqueous solutions. Store in liquid at 4oC for ~1 week or aliquots in suitable size and store at -20oC for long term storage.

**References:** Shinnick TM (1987) *J. Bacteriol.* 169, 1080-1088; Qamra R (2004) *J. Bacteriol.* 186, 8105-8113; Fleischmann R.D. (2002) *J. Bacteriol.* 184, 548-5490

This item is for LABORATORY RESEARCH USE ONLY.

**Related Items**

Catalog#	ProdDescription
HSP651-M	Monoclonal Anti-M. tuberculosis Heat Shock Protein 65 (hsp65/groEL-2/Cpn60-2) IgG

HSP651-P Heat shock protein (*M. leprae* HSP65; 417-429) specific P62 peptide (LLQAAPALDKLKL, MW:1393.7)

HSP652-P Heat shock protein (*M. leprae*/*M. tuberculosis* HSP65; 417-429) P38 peptide (AGGGVTLQAAPALD, MW:1353.5)

HSP653-P Heat shock protein (*M. leprae* HSP65; 343-355) P61 peptide (RVAQIRTEIENSD, MW:1530.7)

HSP654-P Heat shock protein (*M. bovis* HSP65; 243-255) indicator peptide in HLA-DQ2 binding assays (KPLLIIAEDVEGEY, MW:1588.8)

HSP701-C Recombinant purified *M. tuberculosis* Heat Shock Protein 70 (hsp70/Dnak/ML2496) control for Western

HSP701-M Monoclonal Anti-M. tuberculosis Heat Shock Protein 70 (hsp70/Dnak/ML2496) IgG

MTB061-M Monoclonal Anti-Mycobacterium tuberculosis antigen (6kDa/ESAT-6) IgG

MTB06-R Recombinant purified (*E. coli*) *Mycobacterium tuberculosis* antigen (6kDa/ESAT-6)

MTB161-M Monoclonal Anti-Mycobacterium tuberculosis antigen (16kDa/HspX) IgG

MTB16-R Recombinant purified (*E. coli*) *Mycobacterium tuberculosis* antigen (16kDa/HspX)

MTB381-M Monoclonal Anti-Mycobacterium tuberculosis antigen 38kDa/Ag85B IgG

MTB38-R Recombinant purified (*E. coli*) *Mycobacterium tuberculosis* antigen (38kDa/Ag85B)

MTB6381-S Anti-M. Tuberculosis antigens (6KDa/ESAT+16kDa+38KDa/Ag85b mixture of proteins antiserum)

RP-628 Recombinant purified *Mycobacterium Tuberculosis* Heat Shock Protein 70 (hsp70/Dnak/ML2496)

RP-977 Recombinant purified ESAT-6 (6 kDa early secretory antigen of T cells; *Mycobacterium Tuberculosis*)

RP-977-100 Recombinant purified ESAT-6 (6 kDa early secretory antigen of T cells; *Mycobacterium Tuberculosis*)

RP-999 Recombinant purified *Mycobacterium Tuberculosis* major secretory protein Antigen 85B (38kDa Antigen, Ag85b)

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