

- | | | |
|---|---|--------------|
| <input type="checkbox"/> Cat # RP-977 | Early Secretory Target Mycobacterium Tuberculosis (ESAT-6), Recombinant | Size: 10 ug |
| <input type="checkbox"/> Cat # RP-977-100 | Early Secretory Target Mycobacterium Tuberculosis (ESAT-6), Recombinant | Size: 100 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*. Tuberculosis typically attacks the lungs, but can also affect other parts of the body. 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. A number of new TB vaccines are currently in phase I and II clinical trials. MVA85A (modified vaccinia Ankara 85A) is a subunit vaccine to BCG.

The closely related proteins of the **antigen 85 complex** are major secreted products of mycobacteria. 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. Sequence analysis revealed 85% identity between the *M. bovis* BCG 85A and 85B. Many other 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 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.

Mycobacterium antigen **ESAT-6** has been isolated from low molecular weight fractions of the shot-term-culture filtrate (ST-CF) and it can easily be detected in tuberculosis patients. This antigen includes many epitopes detectable in the serum of most patients with tuberculosis (more than 90%). Recently it was shown that ESAT-6 is very potential as diagnostic for differentiation between the mycobacterial infection and BCG vaccination.

CFP-10 also known as ESAT-6-like protein *esxB* or secreted antigenic protein MTSA-10 or 10 kDa culture filtrate antigen CFP-10 is a protein that is encoded by the *esxB* gene. CFP-10 is a 10 kDa secreted antigen from *Mycobacterium tuberculosis*. It forms a 1:1 heterodimeric complex with ESAT-6. Both genes are expressed from the RD1 region of the bacterial genome and play a key role in the virulence of the infection.

Source & Storage

ESAT-6 produced in *E. coli* and purified (98%). The protein is supplied in NaPO₄ buffer, pH 7.0, 0.1M NaCl, 0.05% Sarkosyl in liquid (see lot sp. concn on the vial; typically ~1-2 mg/ml) or in powder form. It is recommended to reconstitute the lyophilized rESAT-6 in distilled H₂O not less than 100µg/ml, which can then be further diluted to other aqueous solutions.

Lyophilized rESAT-6 although stable at room temperature for 3 weeks, should be stored desiccated below -18°C. Upon reconstitution rESAT-6 should be stored at 4°C between 2-7 days and for future use below -18°C. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA).

Specificity

This ESAT-6 protein reacts with human TB serum in ELISA and Western ELISA. ELISA and Western ELISA require 10-100ng protein depending on the nature and affinity of the detection reagent. Human serum polyclonal antibodies yield titers of 1:1000 or greater at 100ng of immobilized protein under standard ELISA conditions.

References: Sorensen AL (1995) *Inf. Immun.* 63, 1710-1717; Berthet FX (1998) *Microbiol.* 144, 3195-3203; Brodin P (2006) *Inf. Immun.* 74, 88-98; Renshaw PS (2002) *JBC* 277, 21598-21603

This item is for LABORATORY RESEARCH USE ONLY.

Related Items

Catalog#	ProdDescription
HSP651-M	Monoclonal Anti- <i>M. tuberculosis</i> Heat Shock Protein 65 (hsp65/groEL-2/Cpn60-2) IgG
HSP651-P	Heat shock protein (<i>M. leprae</i> HSP65; 417-429) specific P62 peptide (LLQAAPALDKLKL, MW:1393.7)
HSP652-P	Heat shock protein (<i>M. leprae</i> / <i>M. tuberculosis</i> HSP65; 417-429) P38 peptide (AGGGVTLLQAAPALD, MW:1353.5)
HSP653-P	Heat shock protein (<i>M. leprae</i> HSP65; 343-355) P61 peptide (RVAQIRTEIENS, MW:1530.7)
HSP654-P	Heat shock protein (<i>M. bovis</i> HSP65; 243-255) indicator peptide in HLA-DQ2 binding assays (KPLLIIAEDVEGEY, MW:1588.8)
HSP701-M	Monoclonal Anti- <i>M. tuberculosis</i> Heat Shock Protein 70 (hsp70/Dnak/ML2496) IgG
MTB061-M	Monoclonal Anti- <i>Mycobacterium tuberculosis</i> antigen (6kDa/ESAT-6) IgG
MTB06-R	Recombinant purified (<i>E. coli</i>) <i>Mycobacterium tuberculosis</i> antigen (6kDa/ESAT-6)
MTB161-M	Monoclonal Anti- <i>Mycobacterium tuberculosis</i> antigen (16kDa/HspX) IgG
MTB16-R	Recombinant purified (<i>E. coli</i>) <i>Mycobacterium tuberculosis</i> antigen (16kDa/HspX)
MTB381-M	Monoclonal Anti- <i>Mycobacterium tuberculosis</i> antigen 38kDa/Ag85B IgG
MTB38-R	Recombinant purified (<i>E. coli</i>) <i>Mycobacterium tuberculosis</i> antigen (38kDa/Ag85B)
MTB6381-S	Anti- <i>M. tuberculosis</i> antigens (6kDa/ESAT+16kDa+38kDa/Ag85b mixture of proteins antiserum)
RP-628	Recombinant purified <i>Mycobacterium tuberculosis</i> Heat Shock Protein 70 (hsp70/Dnak/ML2496)
RP-999	Recombinant purified <i>Mycobacterium tuberculosis</i> major secretory protein Antigen 85B (38kDa Antigen, Ag85b)

RP-977 130326A