

Product Data Sheet

Mycobacterium tuberculosis antigen 6kDa (6-kDa early secreted antigenic target, ESTA-6)

□ Cat # MTB06-R Recombinant (E. coli) Mycobacterium tuberculosis antigen (6kDa/ESTA-6) **Size:** 100 ug

Mycobacterium is a genus of Actinobacteria, given its own family, the Mycobacteriaceae. The genus includes pathogens known to cause serious diseases in mammals, including tuberculosis (Tuberculae Basillus/Mycobacterium Tuberculae) and leprosy (Leprae Basillus/Mycobacterium Leprae). Tuberculosis or TB (short for tubercles bacillus) is a common and often deadly infectious disease caused by various strains of mycobacteria, usually Mycobacterium tuberculosis in humans. High lipid content of this pathogen accounts for many of its unique clinical characteristics. It divides every 16 to 20 hours, an extremely slow rate compared with other bacteria, which usually divide in less than an hour. The M. tuberculosis complex includes four other TB-causing mycobacteria: M. bovis, M. africanum, M. canetti and M. microti. M. africanum is not widespread, but in parts of Africa it is a significant cause of tuberculosis. M. bovis was once a common cause of tuberculosis, but the introduction of pasteurized milk has largely eliminated this as a public health problem in developed countries.

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 (5) 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. The 85C component, a 31.5-kDa protein, is encoded by a different gene in M. tuberculosis (1). All three components, however, share the property of binding to fibronectin (FN), although the strength and importance of the antigen 85-FN interaction has recently been questioned

The naïve or resting macrophages are extremely prone to invasion by Mtb bacilli and are unable to mount any anti-bacterial response associated with activated macrophages. Thus, the resting macrophage seems to be good host cell for the replication of tubercle bacilli. The proteins that are secreted by mycobacteria have gained particular attention in the recent years both as vaccine candidates and virulence factors. Some of these proteins like CFP-10 and

ESAT-6 are encoded by the RD-1 region of Mtb genome, a region consistently deleted in all BCG vaccine strains of M. bovis. This antigen includes many epitopes detectable in the serum of most patients with tuberculosis (more than 90%). By the attempts to obtain the vaccine on the basis of ESAT-6 it was demonstrated that the optimization of adjuvant is very important when using the combination of dioctadecylammonium bromide and monophosphoryllipide. Recently it was shown that ESAT-6 is very potential as diagnostic for differentiation between the mycobacterial infection and BCG vaccination. The main topic in ESAT-6 using is in antibody production and in test-systems for tuberculosis elaboration.

Formulation:

#MTB06-R/ESTA-6 is produced in E. coli and purified (6 kda, >95%). The protein is supplied in a buffer, 50 mM NaPi, 0.1M NaCl, 0.05% Sod Sarcosyl, 0.05% azide or lyophilized in the same buffer (see lot sp conc on the vial). It is recommended to reconstitute the lyophilized protein in PBS at not less than 100µg/ml, which can then be further diluted to other aqueous solutions. Lyophilized protein although stable at room temperature for 3 weeks, should be stored desiccated below -18°C. Upon reconstitution protien should be stored at 4°C between 2-7 days and for future use below -20°C. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA).

References: Peake P (1993) Inf. Immun. 61, 4828-4834; Borremans MI (1989) Inf. Immun. 57, 3123-3130; deWit LA (1990) Nuc. Acid. Res. 18, 395;

Related items

MTB06-R Recombinant (E. coli) Mycobacterium tuberculosis antigen (6kDa)

MTB16-R Recombinant (E. coli) Mycobacterium tuberculosis antigen (16kDa)

MTB38-R Recombinant (E. coli) Mycobacterium tuberculosis antigen (38kDa)

RP-627 Recombinant Myobacterium Tuberculosis Heat Shock Protein 65

RP-628 Recombinant Myobacterium Tuberculosis Heat Shock Protein 70

RP-999 Recombinant Mycobacterium Tuberculosis major secretory protein Antigen 85B

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