ALPHA DIAGNOSTIC INTERNATIONAL

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Product Specification Sheet

□ **Cat #** TDM15-N-100 Trehalose 6,6'-dimycolate [TDM/Cord Factor], M. tuberculosis, Endotoxin-free **SIZE**: 100 ug

The mycobacterial glycolipid trehalose-6,6'-dimycolate (TDM), also named Cord Factor (CF), is an important regulator of immune responses during Mycobacterium tuberculosis (Mtb) infections. Macrophages recognize TDM through the Mincle receptor and initiate TDM-induced inflammatory responses, leading to lung granuloma formation. Controlled use of its cell wall activates macrophages in ways that can be harnessed for therapy. For example, M. bovis Bacille Calmette-Guérin (BCG) is one of the most widely used antitumor adjuvant therapies in humans. Freund's adjuvant, an emulsion of mycobacterial cell wall components in paraffin oil, is mixed with antigens to optimize memory T and B cell responses in mice.

TDM along with a detoxified derivative of Lipid A (MPLA) and cell wall skeleton make up a formulation also known under the name of Ribi adjuvant. Recent studies suggest that Mincle is a pivotal receptor for the mycobacterial cord factor. However, additional receptors may bind TDM independently or in cooperation with Mincle. Candidates include other CLEC proteins, such as Dectin-2, which also associates with FcRg, is expressed in macrophages,and binds to Mtb. The scavenger receptor MARCO interacts with TDM, yet lacks an intracellular domain for signal initiation. In contrast, Mincle can directly trigger Syk-Card9 signalling via its association with FcRg. Whereas in the absence of Mincle macrophages did not respond to TDM, a recent report found Mincle-deficient mice capable of mounting an efficient granulomatous and protective immune response after low and high dose infections with Mtb. Mutant mice generated a normal T helper (TH)1 and TH17 immune response followed by the induction of efficient macrophage effector mechanisms and control of mycobacterial growth identical to wildtype mice. The absence of the innate receptor Mincle may be fully compensated for in vivo in terms of sensing Mtb and mounting a protective inflammatory immune response.

Source of Antigen and Antibodies

Cord Factor, TDM was isolated from Mycobacterium tuberculosis and supplied in water in powder form. **Soluble (5mg/ml) in chloroform: methanol: water (vol:vol) 90:9:1, hexane or isopropanol** and store at -20oC for at least 6 month. Do not store diluted solutions at 4oC for more than a few days. After thawing stable for one day at 4°C, do not freeze again.

Biological activity:

To stimulate mouse bone marrow-derived macrophages, Cord Factor was suspended at a concentration of 0.2mg/ml in hexane. Of the resulting solution 1 or 10µg/well were layered in 96-well tissue culture plates and the solvent completely evaporated. Control wells were layered with solvent without Cord Factor and also incubated at 37°C.

To this layer of Cord Factor, bone marrow-derived macrophages were added in 100µl of medium and incubated at 37°C for 24 hours before activation e.g. TNF-a production was measured in the supernatant. In vivo pulmonary granuloma formation in mice can be induced by 10µg Cord Factor per mouse applied i.v. in a water/oil/water emulsion.

Stability: 6-12 months at –20oC or below.
Shipping: 4oC for solutions and room temp for powder

Endotoxin Content: <0.0002EU/µg

References: The chemical structure of the cord factor of Mycobacterium tuberculosis. Noll H, et al. Biochim. Biophys. Acta (1956); 20:299.
Studies of a biochemical lesion in experimental tuberculosis in mice. 8. Effect of derivatives and chemical analogues of cord factor on structure and function of mouse liver mitochondria. Kato M, et al. Am. Rev. Respir. Dis. (1968); 98:668.

*This product is for In vitro research use only.

Related items

Catalog# Prod Description

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

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

MTB381-C Recombinant purified M. tuberculosis antigen 38kDa/Ag85B control for Western

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

PPD11-A Anti-purified protein derivative (PPD and most proteins of M. tuberculosis) IgG

PPD11-BTN Anti-purified protein derivative (PPD and most proteins of M. tuberculosis) IgG-biotin conjugate

PPD11-FITC Anti-purified protein derivative (PPD and most proteins of M. tuberculosis) IgG-FITC conjugate

RV17341-M Monoclonal Anti-M. tuberculosis Rv1734 dormant protein from H37Rv strain IgG

RV20311-M Monoclonal Anti-M. tuberculosis Rv2031 dormant protein from H37Rv strain IgG

RV26231-M Monoclonal Anti-M. tuberculosis Rv2623 dormant protein from H37Rv strain IgG

TDM15-N-100 Trehalose 6,6'-dimycolate [TDM/Cord Factor], M. tuberculosis, Endotoxin-free

UBQ151-P Ubiquitin 2 (Ub2, 65-76) peptide with anti-M. tuberculosis activity (STLHLVLRLRGG, MW:1321.6)

TDM15-N-100-trehalose 151211SV

India Contact:
Life Technologies (India) Pvt. Ltd.
306, Aggarwal City Mall, Opposite M2K Pitampura, Delhi – 110034 (INDIA). Ph: +91-11-42208000, 42208111, 42208222, Mobile: +91-9810521400, Fax: +91-11-42208444
Email: customerservice@lifetechindia.com Website: www.lifetechindia.com