Product Information

Peptidoglycans (PGN)

Cat No.
77145 Peptidoglycan dyed with Remazol Brilliant Blue R from Staphylococcus aureus
69554 Peptidoglycan from Bacillus subtilis
78721 Peptidoglycan from Methanobacterium sp.
53243 Peptidoglycan from Micrococcus luteus
72789 Peptidoglycan from Saccharomyces cerevisiae
77140 Peptidoglycan from Staphylococcus aureus
79682 Peptidoglycan from Streptomyces sp.

Product Description:
Most bacteria have a cell wall containing a special polymer called peptidoglycan. Over the cell membrane is a shift of peptidoglycan and other polymers including teichoic and teichuronic acids. This peptidoglycan gives a certain rigidity to the cell wall and gives the cell mechanical strength.

The bacterial cell wall is a unique biopolymer, it contains both D- and L-amino acids. Its basic structure is a carbohydrate backbone of alternating units of N-acetyl glucosamine and N-acetyl muramic acid. The N-acetyl muramic acid residues are cross-linked with oligopeptides. The terminal peptide is D-alanine although other amino acids are present as D- isomers. This is the only known biological molecule that contains D-amino acids and it is the target of numerous antibacterial antibiotics e.g. penicillin. Penicillin inhibits the enzymes transpeptidase and carboxypeptidase, which are responsible for the building of peptidoglycan. Lysozyme, present in the tears liquid, is able to split the peptidoglycan between the N-acetyl glucosamine and N-acetyl muramic. The cell wall of Gram-positive bacteria is largely made up of peptidoglycan. There may be up to 40 layers of this polymer, conferring enormous mechanical strength on the cell wall. [3]

The primary immune recognition is based on structures common among invading pathogens. Surface molecules, such as lipopolysaccharide (LPS), peptidoglycan and peptidoglycan recognition protein (PGRP), are known to elicit immune reactions ranging from cytokine release to fever. [4-6]

Applications:
Used for the activity estimation of lytical enzymes (e.g. Lyticase). All peptidoglycan can be used for this purpose but 77145 can be used as chromogenic substrate for lytical enzymes. [1] It is recommended to use a peptidoglycan concentration of 0.15 – 3mg/l in water or buffer and measuring at 450 nm. The peptidoglycan can not be solubilized but it is possible to make a suspension. For the peptidoglycan dyed with remazol brilliant blue R (77145) a possible working suspension is 3 mg/l glycine-buffer (0.2M, pH 10) which can be measured at 595 nm. [7]

For the stimulation of lymphocytes: Peptidoglycan activates the Toll-like receptor 2 (TLR2), present in mammalian cells. Work as an antagonist of Poly (I:C).[2]

References:
7. Sigma-Aldrich quality control or production data.

**Precautions and Disclaimer**

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.