

Technical Data Sheet

Kanamycin sulfate

for biochemistry

Order number: 1162

Kanamycin sulfate is an aminoglycoside antibiotic originally purified from the bacterium *Streptomyces kanamyceticus*. Technically, kanamycin is a mixture of several molecules (A, B, C) but kanamycin A is the main component. Kanamycin is highly soluble in water and it acts against a wide range of gram-negative (*enterobacteria*, *pseudomonads*) and gram-positive bacteria (*staphylococci*). Kanamycin is ineffective against anaerobic bacteria because the antibiotic is absorbed into the cell by an oxygen-consuming process. Kanamycin also shows no effect against *Streptococci* and *Haemophilus*.

Depending on the concentration, kanamycin has a bacteriostatic (inhibits bacterial growth) or bactericidal (kills bacteria) effect. Kanamycin penetrates bacterial cell membranes by oxygen-dependent active transport. Attachment to the 30S subunit of ribosomes causes mRNA read errors, which in turn leads to a general inhibition of protein biosynthesis. In addition, defective proteins are also formed, which can no longer fulfill their biological function, impair the cell structure and may finally lead to lysis of the bacterial cell.

Application

In microbiology, molecular biology and biochemistry, kanamycin is one of the most important selection antibiotics. Genetically modified bacteria, usually *E. coli*, are modified with a kanamycin resistance gene as a selection marker. By culturing the bacteria on solid media containing kanamycin, the genetically modified clones can be separated from the native ones.

The recommended working concentration is 50 - 100 µg/ml, regardless of whether the bacteria are cultured in liquid medium or on agar plates. It is recommended to prepare a stock solution of 10 mg/ml in water.

Further applications of kanamycin are in cell culture (for prevention of bacterial contamination, working concentration 100 µg/ml) and in botany. Since kanamycin also has a toxic effect on plants, it can also be used to select transgenic plants.

Storage and Activity

Kanamycin sulfate for biochemistry shows an activity of min. 750 I.U./mg.

Kanamycin powder should be stored at a cool (2-8°C) and dry place. Freeze stock solutions (10 mg/ml in water) in aliquots at -20°C.

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