

ANT8B-T1

NOVAptamer to Kanamycin

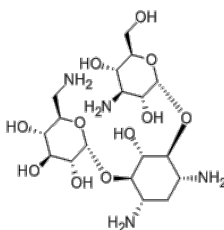
Target Information

Kanamycin

Kanamycin is an aminoglycoside antibiotic primarily used to treat bacterial infections, particularly those caused by Gram-negative bacteria. It works by binding to the bacterial 30S ribosomal subunit, disrupting protein synthesis and causing bacterial cell death.

Molecular formula: $C_{18}H_{36}N_4O_{11}$

Molecular weight: 484.5 g/mol



NOVAptamer ANT8B-T1

Chemistry: DNA

Size: 52 nt

Molecular weight: 16600.9 g/mol

Molar extinction coefficient: $523800 \text{ Lmol}^{-1}\text{cm}^{-1}$

Binding buffer: 20 mM HEPES, 20 mM CH_3COONa , 140 mM CH_3COOK , 3 mM $(\text{CH}_3\text{COO})_2\text{Mg}$, pH 7.4

A full-length version of this aptamer, 79 nt long, is available (see ANT8B).

Folding an aptamer into its tertiary structure is essential for optimal target binding. To achieve this, resuspend the aptamer in assay buffer, heat to 95°C (~2 minutes), then allow to cool to room temperature (~5 minutes) before use.

Affinity Determination

Affinity Determination Method: Fluorescence

Apparent K_D in the binding buffer: 20 μM

Specificity:

- does not cross react with: streptomycin, neomycin, gentamycin.

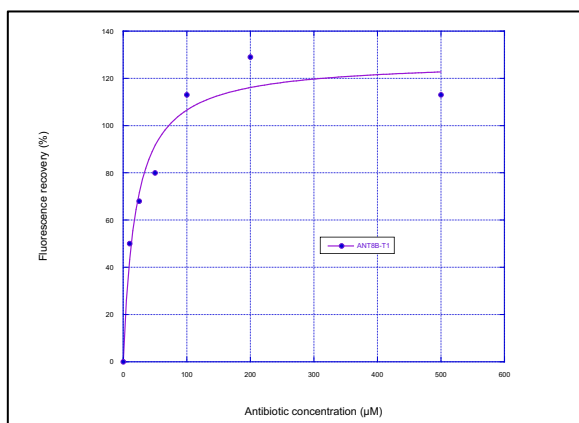


Figure 1. Dose-response fluorescence recovery in the bimolecular beacon assay upon kanamycin addition.

Key advantages offered by aptamers over other affinity reagents, notably antibodies

✓	High affinity and selectivity
✓	Thermostable, long shelf life
✓	Animal- and cell-free selection
✓	Chemical synthesis
✓	Batch to batch reproducibility

Custom synthesis

- **Available at different scales** – upon request, up to 100 nanomoles
- **Various purification modes** – adapted to specific experimental requests
- **Extensive conjugation options for diverse applications:**
 - Grafting: NH₂, SH, biotin, etc.
 - Sensing: fluorescent dyes, nanoparticles, redox groups
 - Cross-linking: click chemistry reagents
- **Molecular beacons** - possible hybridization with a complementary oligonucleotide to form a bimolecular beacon, enabling quantitative detection

Applications (For Research Use Only)

- Biosensing
- Detection of kanamycin in dairy products by fluorescence

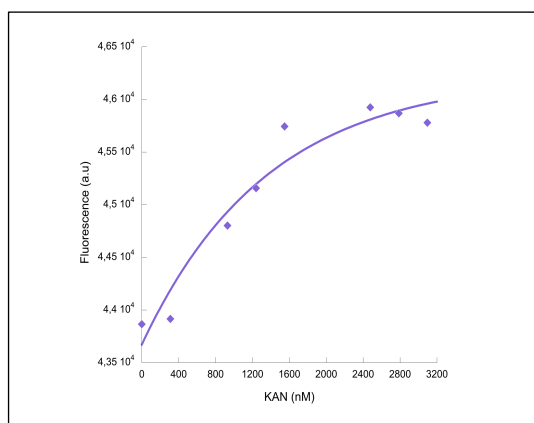


Figure 2. Detection of kanamycin in milk - fluorescence intensity increases upon binding of the aptamer to kanamycin in milk, enabling detection of low antibiotic concentrations.

Contact information

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