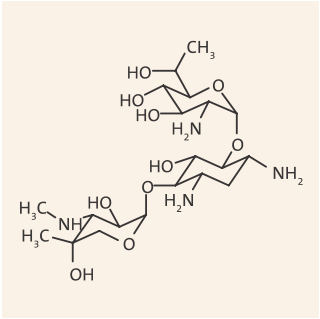
G418



Molecular structure

G418 Sulfate, liquid 50 mg/mL solution (Cat. No. 30-234-CI), 100 mL

G418 is an aminoglycoside active against aerobic and facultative aerobic Gram-negative bacilli, as well as some Gram-positive bacteria. In general, this antibiotic is used for selection of transformants expressing an aminoglycoside-modifying enzyme. The structure of G418 consists of the dibasic cyclitol ring, 2-deoxystreptamine, linked to aminated sugars through a glycosidic bond.

Aminoglycosides bind irreversibly to ribosomes and inhibit protein synthesis by disrupting their proofreading capability, leading to pre-termination or mistranslation. Inhibition of synthesis is most effective on actively growing cells.

The structural uniqueness of G418 stems from a hydroxyl function rather than an amino function at the C-6's position. This difference enables specific binding to the 80S ribosome complex and, thereby, makes G418 a more effective inhibitor of eukaryotic protein synthesis, as compared to other aminoglycosides that bind non-specifically to eukaryotic cells.

G418 sulfate inhibitors include a class of aminoglycoside-modifying enzymes, the aminoglycoside phosphotransferases (APH), that covalently modify the antibiotic's amino or hydroxyl functions to weaken the drug-ribosome interaction.

Aminoglycoside-modifying enzymes are associated with plasmids and transposons; an *aph(3)* gene is a common resistance marker associated with Tn5.

The effective killing concentration of the antibiotic will vary by cell type, media, growth conditions, density, as well as the cell's metabolic rate and position in the cell cycle. When using G418 sulfate in a new cell system, a full dose curve is suggested, and several points on that curve should be retested with each new lot of G418 sulfate.

Product Specifications

Mode of Action	Binds to the prokaryotic 30S and eukaryotic 80S ribosomal subunits and affects the fidelity of translation
Spectrum	- Gram (+) prokaryotes - Gram (-) bacilli aerobes and facultative anearobes, only. - Eukaryotes
Microbiological Potency	Liquid: 50 µg/mL Powder: >700 µg/mg G418 is soluble in water (50 mg/mL)
Conferred Resistance	Aminoglycoside-modifying enzymes and change in cell permeability or a change in ribosomal structure
Molecular Weight	692.7
Formula	$C_{20}H_{40}N_4O_{10} * {}_2H_2SO_4$
Appearance	Liquid: Colorless Powder: White to off-white
Working Concentration	100 to 5,000 µg/mL
Storage and Stability	Liquid: 2°C to 8°C Powder: 15°C to 30°C Protected from light

Ordering Information

Cat. No.	Description	Unit Size	Qty/Pk
30-234-CR	G418 Sulfate, liquid 50 mg/mL solution	10 mL	1
30-234-CI	G418 Sulfate, liquid 50 mg/mL solution	100 mL	1
61-234-RF	G418 Sulfate, powder	1 g	1
61-234-RG	G418 Sulfate, powder	5 g	1
61-234-RK	G418 Sulfate, powder	50 g	1