Product Information

sigma-aldrich.com
3050 Spruce Street, Saint Louis, MO 63103 USA
Tel: (800) 521-8956 (314) 771-5765 Fax: (800) 325-5052 (314) 771-5757
email: techservice@sial.com sigma-aldrich.com

Antibiotic Selection Agents

Product Name	Product Number	Form[A]	Storage	Solubility	Stability at 37 °C	Mode of Action	Suggested Working Conc.
Actinomycin D	A9415	CT	2-8 ºC	DMSO		Complexes with DNA and interferes with RNA synthesis	1 µg/ml
Bleomycin Sulfate	B8416	CT	2-8 ºC	H_2O		Complexes with DNA, causing strand scissions	10-100 µg/ml
Chloramphenicol	C3175	L	RT	H_2O + NaOH	5 days	Inhibits elongation at peptidyl transferase	5 µg/ml
Cycloheximide	C0934	CT	2-8 ºC	Ethanol		Inhibits protein synthesis	10 µg/ml
Antibiotic G418	A1720	CT	2-8 ºC	H_2O	8 days	Blocks polypeptide synthesis and inhibits chain elongation	100 - 800 µg/ml
Anitbiotic G418 (50 mg/ml solution)	G8168	AF					
Hygromycin B	H3274	L	2-8 ºC	H_2O			
Mitomycin C	M4287	CT	2-8 ºC	H_2O		Inhibits nucleic acid synthesis	10-50 µg/ml
Mycophenolic Acid	M3536	CT	2-8 ºC	Methanol		Blocks inosine monophosphate dehydrogenase in guanosine monophosphate pathway	25 µg/ml
Puromycin•HCl	P8833	CT	-0 ºC	H_2O		Inhibits protein syntheses	10-100 µg/ml

[A]All products are cell culture tested and offered as either a powder (CT); membrane filtered and aseptically filled solution (AF); or lyophilized (L).

Antibiotic Selection Agents continued

O **G418 (Product No. A1720)**

G418's most common application is in molecular biology as a selection agent. G418 sulfate is toxic to bacteria, yeast, protozoa, helminths, and mammalian cells. Resistance is conferred by one of two dominant genes of bacterial origin which can be expressed in eukaryotic cells.

PRODUCT USE

G418 is water soluble and can be stored at room temperature for as long as 1 year. Aqueous solutions should be stored frozen. The amount of G418 required for selection will vary with each cell type and growth cycle. Although cells that are multiplying will be affected sooner than those that are not, cells that are in log phase will still require 3 to 7 days for selection. In general, the amount of G418 required for selection of mammalian cells is 400 µg/ml and 200 µg/ml for maintenance.

O **HYGROMYCIN B (Product No. H3274)**

Hygromycin B is an aminoglycoside antibiotic which is effective against prokaryotic and eukaryotic microorganisms and cells. Similar to G418, its most common application is in molecular biology as a selection agent. Insect and mammalian cells transformed with the hph gene, which encodes for hygromycin-B-phosphotransferase, are resistant to hygromycin B.

PRODUCT USE

Hygromycin B is provided as a powder. The recommended concentration range for use as a selection agent is 100 - 800 µg/ml selection medium:

Prokaryotes X100 µg/ml
Lower eukaryotes X200 µg/ml
Higher eukaryotes X150-400 µg/ml

Refer to the literature for more specific application information.

O **MITOMYCIN C (Product No. M4287)**

Mitomycin C is an antibiotic produced from *Streptomyces caespitosus*. It is an alkylating agent with antineoplastic properties. While mitomycin C is not cell cycle specific, it is most active in the late G1 and early S phase of the cell cycle. It acts by suppressing the synthesis of nucleic acids.

In cell culture, mitomycin C mitotically arrests cells. It is often employed to prepare cells used in feeder layers or preparation of stimulator lymphocytes for the mixed lymphocyte reaction. For example, mitomycin C is used to prepare STO feeder layers used in embryonic stem cell work.

PRODUCT USE

Mitomycin C is supplied as a powder. Dissolve the contents of each vial in 4 ml of sterile water (W 3500 or W 1503) or sterile PBS to prepare a solution stock. Store the reconstituted solution in the dark at 2-8 °C. This solution should not be used for longer than 1 week. Mitomycin C is typically used in inactivation medium at a final concentration of 10-50 µg/ml for the treatment of feeder layers. Please refer to the literature for more specific application information.

O **MYCOPHENOLIC ACID (Product No. M3536)**

Mycophenolic acid is an antibiotic produced by *Penicillium brevicompactum*. It is an inhibitor of the enzyme inosinate dehydrogenase (IMP dehydrogenase) and therefore inhibits de novo nucleotide synthesis, i.e. it inhibits XMP and GMP formation.

Mycophenolic acid is used as a selection agent in mammalian protein expression systems where the E. coli gene (Ecogpt) encoding the enzyme xanthineguanine phosphoribosyl-transferase (XGPRT) has been inserted. Mammalian cells transformed with Ecogpt can be grown in medium containing aminopterin and mycophenolic acid with xanthine as the sole precursor for purine synthesis.

PRODUCT USE

Mycophenolic acid is not soluble in water. It is soluble in ether, chloroform and alcohol. The use concentration is approximately 25 mg/ml. Please refer to the literature for more specific information.