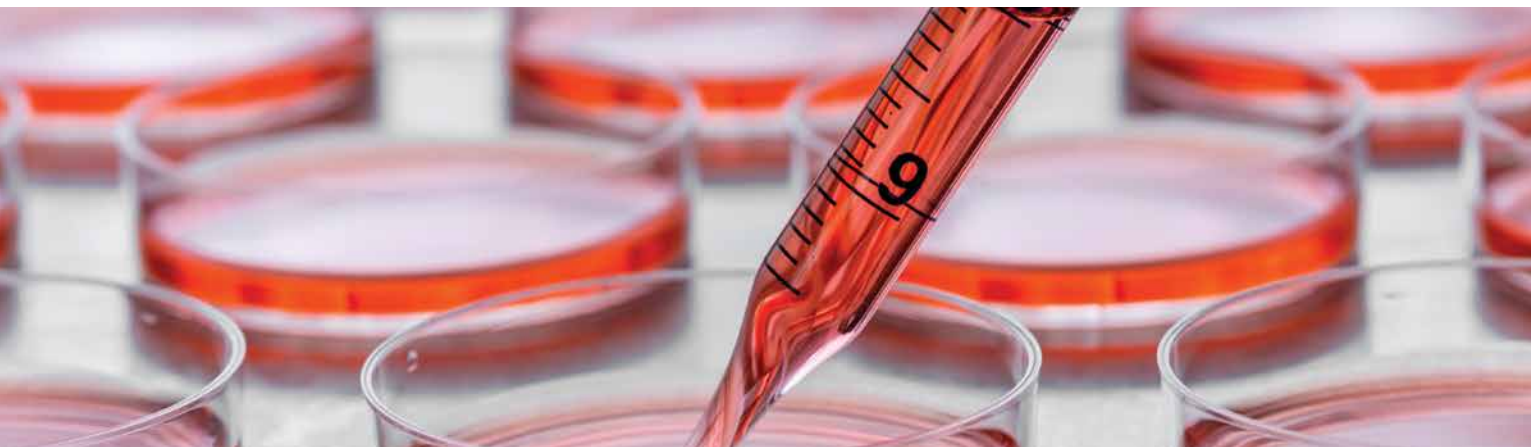


Antibiotics for Cell Culture



Antibiotics for Mammalian Cell Culture, Plant Cell Culture
and DNA, RNA and Protein Modification

Antibiotics for Cell Culture



The use of antibiotics to treat infections has existed for thousands of years, going back to the ancient Egyptians and Greeks. They recognized that mixtures of various natural products could be used to treat infections and used specially selected molds, plant materials and extracts to treat them. However, it wasn't until the early 20th century that Alexander Fleming noticed that a number of disease-causing bacteria were killed by a fungus of the genus *Penicillium*. He named this compound penicillin and, with this discovery, the modern era of powerful antibiotics began.

The terms antibiotic and antibacterial are often used interchangeably; both are compounds used against bacteria. However, one should recognize that modern antibiotics can also be effective against many fungi, yeasts, mycoplasmas and some protozoans. Additionally, many new antibiotics are often used as antineoplastic reagents and tools for protein modification and DNA/RNA manipulation. Antibiotics currently find widespread application in the Life Sciences markets for research and development in Cell Biology, Immunology and Molecular Biology, not only as a contamination preventative, but also as a bioactive mechanism initiator.

Antibiotics typically follow one of two biological modes of action on microbials: they either kill the bacteria outright (bactericidal), or they interfere with protein synthesis of the bacteria and prevent further growth (bacteriostatic). In addition, some antibiotics are able to target specific types of bacteria, such as gram positive or gram negative organisms, while others are active against a wide range of bacteria, fungi and yeasts. Having a variety of antibiotics available for research provides today's scientists with a myriad of options for eliminating bacterial contamination, modifying proteins, DNA and RNA, and investigating possible new cancer drugs.

Specific antibiotics are able to inhibit the formation of bacterial cell walls, inhibiting further bacterial growth. Penicillin and Vancomycin are examples of antibiotics that interfere with cell wall synthesis, thereby destroying the bacteria. Gentamycin, Kanamycin and Tetracycline are examples of antibiotic compounds that interfere with protein synthesis within the bacteria by disrupting protein formation on the 30S ribosome. Ciprofloxacin and Mitomycin C inhibit DNA synthesis, while Neomycin blocks RNA with high affinity. Antibiotics like Amphotericin B, Monensin and Valinomycin can act as ionophores, forming cationic channels (Na^+ , K^+ , H^+) in bacterial membranes, thus changing the intracellular ionic environment and causing lysis and cell death. Finally, Actinomycin D and Bleomycin are often studied as anti-cancer, anti-tumor antibiotics, since they attack fast-growing malignant cells and kill them.

MP Biomedicals is pleased to present a select listing of our extensive antibiotics showcase. We currently offer more than 200 high purity antibiotics for all your antibacterial research applications. Whether you require an antibiotic as a cell culture additive to prevent contamination, as a cancer research tool, for proteomics studies, or to manipulate DNA/RNA fragments, MP Bio has a solution. If you're looking for an antibiotic not listed here, be sure to check our web site, www.mpbio.com, where you will find hundreds of additional antibiotics.

Antibiotics for Mammalian Cell Culture

In mammalian cell culture, contamination with microbiological organisms like bacteria, yeast, fungi, mycoplasma and endotoxins can be extremely devastating, cause significant cell death and even catastrophic loss of the entire culture. The detrimental impact of bacterial contamination needs to be aggressively treated, or optimally, avoided in the first place. Currently, the availability of a wide selection of antibiotics provides an opportunity to combat cell culture contamination with minimal impact on the mammalian cells being cultured. Informed selection of the right antibiotic for your specific cell lines and culture conditions allows full control of the media, free from contamination by bacteria, fungi, mycoplasma and yeasts, without altering cellular growth parameters.

Whether you require an antibiotic active against gram positive bacteria, gram negative bacteria, or both, MP Bio has a solution available. Our NeuroPure™ antibiotics are ideal for managing fungi or yeast contamination in cell cultures. Consult our handy Antibiotic Selection Guide on pg. 11 of this brochure and make a confident decision that your mammalian cell culture project is under your control. And should you need a specific antibiotic not listed here, visit www.mpbio.com to find hundreds of additional antibiotics.

Description	Size	Cat. No.
Acivicin, NeuroPure™ $C_5H_7ClN_2O_3$ MW 178.6 [422298-92-2] A potent antitumor antibiotic that induces apoptosis in human lymphoblastoid cells. It acts by inhibiting γ -glutamyl trans-peptidase and transmembrane glutathione transport. Displays antitumor and anti-metastatic activity.	1 mg 5 mg 25 mg	02180826
Alamethicin, NeuroPure™ $C_{92}H_{150}N_{22}O_{25}$ MW 1964.4 [27061-78-5] (Antibiotic U-22324). Peptide antibiotic from the fungus <i>Trichoderma viride</i> . Forms voltage-dependent ion channels in the lipid bilayer of cell membranes. Inhibits non-specific ion efflux through the membrane.	1 mg 5 mg 10 mg	02180827
Amoxicillin $C_{16}H_{19}N_3O_5S$ MW 365.4 [26787-78-0] A bacteriolytic, β -Lactam antibiotic in the aminopenicillin family effective against gram positive and gram negative bacteria. It interferes with cell wall formation by inhibiting cross-linkage between the linear peptidoglycan polymer chains that make up a major component of the cell walls.	1 g 5 g 10 g 25 g	02190145
Amphotericin B $C_{47}H_{73}NO_{17}$ MW 924.1 [1397-89-3] From <i>Streptomyces</i> species. A polyene antifungal antibiotic used in cell culture to prevent contamination by fungi. Forms transmembrane monovalent ion (Na^+ , K^+ , Cl^-) channels which cause ion leakage, leading to fungal cell death.	100 mg 500 mg 1 g	02195043
Ampicillin Sodium Salt, Cell Culture Reagent $C_{16}H_{18}N_3O_4SNa$ MW 371.4 [69-52-3] A β -lactam antibiotic that inhibits cell wall biosynthesis by inhibiting trans-peptidase. It is effective against gram positive bacteria and some gram negative bacteria.	5 g 25 g 100 g	02194526
Antibiotic A 23187, NeuroPure™ $C_{92}H_{150}N_{22}O_{25}$ MW 1964.4 [27061-78-5] Also known as Calcimycin and Calcium Ionophore. It has antibiotic properties against gram positive bacteria and fungi and acts as a divalent cationic ionophore that carries Ca^{++} across cell membranes. Used to increase intracellular Ca^{++} levels in intact cells and uncouple oxidative phosphorylation.	1 mg 5 mg 10 mg	02180773
Azithromycin, NeuroPure™ $C_{38}H_{72}N_2O_{12}$ MW 749.0 [83905-01-5] A macrolide antibiotic that is effective against both gram positive and gram negative organisms. It inhibits 50S ribosomal subunit formation and elongation.	25 mg 100 mg	02180830

Antibiotics for Mammalian Cell Culture

Description	Size	Cat. No.
Blasticidin S Hydrochloride $C_{17}H_{26}N_8O_5 \cdot HCl$ MW 458.9 [2079-00-7] Ex <i>Streptomyces griseochromogenes</i> . Broad spectrum nucleoside antibiotic. Inhibits protein synthesis in prokaryotic and eukaryotic organisms. Suitable for selection of cells carrying plasmids conferring blasticidin resistance.	25 mg 50 mg 100 mg	02150477
Bleomycin Sulfate, NeuroPure™ $C_{55}H_{85}N_{17}O_{25}S_4$ MW 1512.6 [9041-93-4] A glycopeptide antitumor antibiotic. Induces apoptosis through oxidative stress and DNA damage of single strand breaks, double strand breaks and apurinic/apyrimidinic modifications. Also degrades RNA.	1 mg 5 mg 10 mg	02180833
Capreomycin Sulfate $C_{25}H_{46}N_{14}O_{11}S$ MW 750.8 [1405-37-4] From <i>Streptomyces capreolus</i> . A peptide antibiotic, commonly grouped with the aminoglycosides, which is given in combination with other antibiotics for MDR-tuberculosis. Used to study bacterial ribosomal subunit interactions and translocation processes during protein synthesis.	250 mg 1 g	02154924
Cefazolin Sodium Salt $C_{29}H_{31}N_8O_4S_3Na$ MW 476.5 [27164-46-1] (Cefamedin). A first-generation cephalosporin antibiotic effective against gram positive bacteria. It works by inhibiting cell wall synthesis of the bacteria by binding to penicillin-binding proteins.	100 mg 500 mg 1 g	02154946
Cerulenin, NeuroPure™ $C_{12}H_{17}NO_3$ MW 223.3 [17397-89-6] An antifungal antibiotic that induces apoptosis in tumor cell lines by inhibiting fatty acid synthase and disrupting sterol and fatty acid biosynthesis. Induces apoptosis in a caspase-dependent manner in A-375 cells.	5 mg 10 mg	02180874
Ciprofloxacin Hydrochloride $C_{17}H_{18}FN_3O_3 \cdot HCl$ MW 367.8 [86393-32-0] A second-generation fluoroquinolone antibiotic effective against anaerobic bacteria, both gram positive and gram negative. It inhibits DNA gyrase and interferes with cell division. Widely used in cell culture for its broad-spectrum activity against bacterial contamination of the media.	1 mg 5 mg 10 mg	02199020
Dihydrostreptomycin Sulfate, Cell Culture Reagent $C_{21}H_{41}N_7O_{12} \cdot 3/2H_2SO_4$ MW 730.7 [5490-27-7] An aminoglycoside bactericidal antibiotic that destroys bacteria by inhibiting protein synthesis of the 30S bacterial ribosome. Each mg of dihydrostreptomycin sulfate contains 650 µg/mg of dihydrostreptomycin.	5 g 25 g 100 g	02194528
Doxycycline Monohydrate, NeuroPure™ $C_{22}H_{24}N_2O_8 \cdot H_2O$ MW 462.4 [17086-28-1] A synthetic tetracycline that inhibits angiogenesis and matrix metalloproteases. Has been shown to reduce the in vitro growth of human breast and prostate cancer cells. Also inhibits the inflammatory response to Lyme's Disease.	500 mg 1 g 5 g	02180839
Enrofloxacin $C_{19}H_{22}FN_3O_3$ MW 359.4 [93106-60-6] A synthetic fluoroquinolone bactericidal agent. It has antibacterial activity against a broad spectrum of gram negative and gram positive bacteria. It acts by inhibiting bacterial DNA gyrase (a type-II topoisomerase), thereby preventing DNA supercoiling and DNA synthesis.	10 g 25 g	02199019
Gentamycin Sulfate, PhytoPure™ $C_{21}H_{43}N_5O_7$ MW 477.6 [1405-41-0] A bactericidal aminoglycoside antibiotic predominantly active against gram negative bacteria. It disrupts protein synthesis at the 30S ribosome. Approximately 600 µg gentamycin per mg.	50 mg 1 g 5 g	02194530

Description	Size	Cat. No.
Monensin Sodium Salt $C_{36}H_{61}O_{11}Na$ MW 692.9 [22373-78-0] A polyether antibiotic effective against gram positive and gram negative bacteria. It functions as an ionophore with monovalent cations (Na^+ , K^+ , Li^+), transporting them across lipid membranes. It also blocks intracellular protein transport.	500 mg 1 g	02190241
Neomycin Sulfate $C_{23}H_{46}N_6O_{13} \cdot 3H_2SO_4$ MW 908.9 [1405-10-3] An aminoglycoside antibiotic effective against gram negative bacteria. Acts as an inhibitor of protein synthesis, and is useful in tissue culture studies.	1 g 5 g 10 g 25 g 100 g	02180610
Norfloxacin $C_{16}H_{18}FN_3O_3$ MW 319.3 [70458-96-7] A synthetic fluoroquinolone antibiotic used to treat urinary tract infections. It is effective against gram positive and gram negative bacteria, and its mode of action is to inhibit DNA gyrase and topoisomerase IV, thus preventing cell division.	5 g 25 g	02155949
Nystatin, Cell Culture Reagent $C_{47}H_{75}NO_{17}$ MW 926.1 [1400-61-9] A polyene antifungal useful in mammalian cell culture against molds, fungi and yeast contamination. Similar to Amphotericin B, it binds to ergosterol and leads to K^+ leakage resulting in fungal cell death. Not less than 4800 units/mg.	500 KU 5 MU 25 MU	02194534
Oxytetracycline Hydrochloride $C_{22}H_{24}N_2O_9 \cdot HCl$ MW 496.9 [2058-46-0] A broad spectrum tetracycline antibiotic that works by interfering with the protein synthesis of the bacteria. Frequently added to livestock feed to prevent diseases and infections in cattle and poultry.	10 g 50 g 100 g	02150145
Penicillin G, Potassium Salt, Cell Culture Reagent $C_{16}H_{17}N_2O_4S \cdot K$ MW 372.5 [113-98-4] (Benzylpenicillin). A narrow spectrum penicillin predominantly effective against gram positive bacteria. Penicillin G acts by inhibiting cell wall synthesis through binding to penicillin binding proteins (PBPs), inhibiting peptidoglycan chain cross-linking. Activity approximately 1500–1700 units/mg.	1 MU 10 MU 25 MU 100 MU	02194536
Penicillin G, Sodium Salt, USP, PhytoPure™ $C_{16}H_{17}N_2O_4S \cdot Na$ MW 356.4 [69-57-8] (Benzylpenicillin). A narrow spectrum penicillin predominantly effective against gram positive bacteria. Penicillin G acts by inhibiting cell wall synthesis through binding to penicillin binding proteins (PBPs), inhibiting peptidoglycan chain cross-linking. Activity not less than 1500 units/mg.	1 MU 25 MU 100 MU	02194537
Polymyxin B Sulfate, Cell Culture Reagent $C_{43}H_{82}N_{16}O_{12} \cdot xH_2SO_4$ MW 1385.63 [1405-20-5] A bactericidal antibiotic effective against gram negative bacteria. Polymyxin B is composed of polymyxins B1, B1-I, B2, B3, and B6. It destabilizes the bacterial outer membrane leading to water uptake, resulting in cell death.	1 MU 5 MU	02194538
Puromycin Dihydrochloride, Cell Culture Reagent $C_{22}H_{29}N_7O_5 \cdot 2HCl$ MW 544.4 [58-58-2] An aminonucleoside antibiotic that causes premature chain termination during protein synthesis. Puromycin works by inhibiting peptidyl transfer on both prokaryotic and eukaryotic ribosomes. It is widely used in cell biology as a selection antibiotic agent in mammalian cell culture systems.	10 mg 25 mg 100 mg	02194539
Tylosin Tartrate $C_{46}H_{77}NO_{17} \cdot C_4H_6O_6$ MW 1066.2 [74610-55-2] A macrolide antibiotic with broad spectrum activity against gram positive bacteria. Used in veterinary medicine to treat bacterial infections in a wide range of species.	1 g 5 g 10 g	193454

Antibiotics for Plant Cell Culture

Antibiotics may be used in plant cell culture for two different purposes. First, they may be added to the culture media to maintain sterility. Microorganisms that may infect plant cell cultures can rapidly deplete the medium of nutrients required by the plant cells for growth. Inclusion of antibiotics in the culture media can prevent and treat microbial contamination. It is recommended to use the minimum inhibitory concentration (MIC) of antibiotics that are effective for controlling bacteria, as the antibiotics themselves may be phytotoxic, restrict rooting and multiplication, and retard general growth in some plant cultures. Another use for antibiotics in plant culture is to select cells that have been stably transformed by an antibiotic-resistance gene. By including antibiotic-resistance in the construct, only successfully transformed cells can grow in media containing that antibiotic. This is dependent upon the antibiotic and the plant species being cultured, which is made easier by virtue of a wide range of antibiotics to select from. Our PhytoPure™ brand of MP antibiotics provides the finest quality antibiotics specifically for plant cell culture applications, among more than 200 antibiotics in our product showcase. Visit us at www.mpbio.com and make your selection.

Description	Size	Cat. No.
<p>Amikacin, PhytoPure™ $C_{22}H_{43}N_5O_{13}$ MW 585.6 [37517-28-5]</p> <p>From <i>Kanamycin A</i>. An amino-glycoside antibiotic that works by binding to the bacterial 30S ribosomal subunit, causing misreading of mRNA and leaving the bacterium unable to synthesize proteins vital to its growth. It is effective against gram negative bacteria, fungi and mycobacteria.</p>	250 mg 1 g 5 g	02150342
<p>Bacitracin, PhytoPure™ $C_{66}H_{103}N_{17}O_{16}S$ MW 1422.7 [1405-87-4]</p> <p>A cyclic polypeptide antibiotic effective against both gram positive and gram negative bacteria. It inhibits the dephosphorylation of isoprenyl pyrophosphate, which interferes with peptidoglycan bacterial cell wall formation.</p>	5 g 25 g	02180934
<p>Carbenicillin Disodium Salt, PhytoPure™ $C_{17}H_{16}N_2O_6SNa_2$ MW 422.4 [4800-94-6]</p> <p>(α-Carboxybenzylpenicillin). A water-soluble bacteriolytic antibiotic in the carboxypenicillin group. It is effective against gram negative bacteria. Inhibits bacterial cell wall synthesis (peptidoglycan cross-linking) by inactivating transpeptidases on the inner surface of the bacterial cell membrane.</p>	250 mg 1 g 5 g	02195092
<p>Cefotaxime Sodium Salt, PhytoPure™ $C_{16}H_{16}N_3O_7S_2Na$ MW 477.4 [64485-93-4]</p> <p>A cephalosporin antibiotic effective against gram positive and gram negative bacteria. It interferes with cell wall formation by inhibiting cross-linkage between the linear peptidoglycan polymer chains that make up a major component of the cell walls. Useful in plant cell culture because it doesn't affect the plasmids of developed vascular plants.</p>	100 mg 500 mg 1 g	02154947
<p>Chloramphenicol, PhytoPure™ $C_{11}H_{12}Cl_2N_2O_5$ MW 323.2 [56-75-7]</p> <p>A synthetic antibiotic first isolated from <i>Streptomyces venezuelae</i>. It is effective against gram positive and gram negative bacteria. It interferes with translation on the 50S ribosomal subunit at the peptidyl transferase step (elongation inhibition) and inhibits mitochondrial and chloroplast protein synthesis.</p>	5 g 25 g 100 g 500 g	02190321
<p>Ciprofloxacin Hydrochloride, PhytoPure™ $C_{17}H_{19}ClFN_3O_3$ MW 367.8 [86483-48-9]</p> <p>A fluoroquinolone antibiotic effective against anaerobic bacteria, both gram positive and gram negative. It inhibits DNA gyrase and interferes with cell division. Very effective against mycoplasma, and is widely used to prevent contamination of the media.</p>	5 g 25 g	02180935
<p>Fosmidomycin Sodium Salt, PhytoPure™ $C_4H_9NNaO_3P$ MW 205.1 [66508-37-0]</p> <p>A phosphonic acid antibiotic. It specifically inhibits 1-deoxy-D-xylulose 5-phosphate (DXP) reductoisomerase, a key enzyme in the non-mevalonate pathway of isoprenoid biosynthesis. It suppresses gram negative and gram positive bacteria and inhibits the non-mevalonic pathway in plants, as well as the malaria parasite <i>Plasmodium falciparum</i>.</p>	1 mg 5 mg 10 mg	02180936
<p>G418 Disulfate, PhytoPure™ $C_{20}H_{40}N_4O_{10} \cdot 2H_2SO_4$ MW 692.7 [108321-42-2]</p> <p>(Gentamicin). G418 is an aminoglycoside related to Gentamicin and is toxic to bacteria, yeast, higher plants, mammalian cells, protozoans and helminths. It blocks polypeptide synthesis in both prokaryotic and eukaryotic cells and is useful for selection of genetically engineered eukaryotic cells in culture.</p>	250 mg 1 g 5 g	02180937
<p>Gentamycin Sulfate, PhytoPure™ $C_{21}H_{43}N_5O_7 \cdot H_2SO_4$ MW 575.7 [1405-41-0]</p> <p>A bactericidal aminoglycoside antibiotic predominantly active against gram negative bacteria. It disrupts protein synthesis at the 30S ribosome. Used as a selection agent (gentamicin-resistance gene) in cell culture and molecular biology applications. Approximately 600 μg gentamycin per mg.</p>	50 mg 1 g 5 g	02194530

Description	Size	Cat. No.
Gentamycin Sulfate, USP, PhytoPure™ $C_{21}H_{43}N_5O_7 \cdot H_2SO_4$ MW 575.7 [1405-41-0] A bactericidal aminoglycoside antibiotic predominantly active against gram negative bacteria. It disrupts protein synthesis at the 30S ribosome. Used as a selection agent (gentamicin-resistance gene) in cell culture and molecular biology applications. Approximately 600 µg gentamycin per mg.	250 mg 1 g 5 g 10 g 25 g	02190057
Hygromycin B, PhytoPure™ $C_{20}H_{37}N_3O_{13}$ MW 527.5 [31282-04-9] Purity: 95%. An aminoglycoside antibiotic produced by the bacterium <i>Streptomyces hygroscopicus</i> that kills bacteria, fungi and higher eukaryotic cells by inhibiting protein synthesis. It is used for the selection and maintenance of prokaryotic and eukaryotic cells that contain the hygromycin resistance gene.	50 mg 100 mg 250 mg 1 g	02194170
Kanamycin Sulfate, PhytoPure™ $C_{18}H_{36}N_4O_{11}$ MW 582.6 [25389-94-0] From <i>Streptomyces kanamyceticus</i> . An aminoglycoside bacteriocidal antibiotic that acts against gram positive and gram negative bacteria. Inhibits protein biosynthesis by causing a misreading of the 70S-ribosome. Useful in plant cell culture for selection of the kanamycin-resistance gene.	1 g 5 g 25 g	02194531
Neomycin Sulfate, PhytoPure™ $C_{23}H_{46}N_6O_{13} \cdot 3H_2SO_4$ MW 908.9 [1405-10-3] An aminoglycoside antibiotic active against gram negative bacteria. Commonly used in many topical medications such as creams, ointments, and eyedrops. It binds to duplex RNA with high affinity and inhibits protein biosynthesis. Also acts as a calcium channel blocker.	1 g 5 g 10 g	02194533
Nystatin, PhytoPure™ $C_{47}H_{75}NO_{17}$ MW 926.1 [1400-61-9] (Mycostatin; Fungicidin). A polyene antifungal effective against molds, fungi and yeast contamination. It binds to ergosterol and creates nystatin/ergosterol based ion channels in lipid bilayers causing K ⁺ leakage and fungal cell death.	500 KU 5 MU 25 MU	02194534
Paromomycin Sulfate, PhytoPure™ $C_{23}H_{45}N_5O_{14} \cdot H_2SO_4$ MW 713.7 [1263-89-4] An aminoglycoside antibiotic effective against gram negative bacteria. Like neomycin, it inhibits protein synthesis by binding to 16s-ribosomal RNA. Useful in studies of cytosine-cytosine (CC) mismatch containing RNAs.	1 g 5 g	02194535
Penicillin G Sodium Salt, USP, PhytoPure™ $C_{16}H_{17}N_2O_4SNa$ MW 356.4 [69-57-8] (Benzylpenicillin). A semi-synthetic, broad-spectrum β-lactam penicillin antibiotic with bactericidal activity against gram positive bacteria. It inhibits bacterial cell wall synthesis by disrupting peptidylglycan cross-linking.	1 MU 25 MU 100 MU	02194537
Rifampin, PhytoPure™ $C_{43}H_{58}N_4O_{12}$ MW 822.9 [13292-46-1] (Rifampicin). A bactericidal antibiotic drug of the rifamycin group. It specifically inhibits DNA-dependent bacterial RNA polymerase. Mammalian RNA polymerase is not affected, so it is useful in plant cell culture work. It is effective against mycobacteria. Also an inhibitor of chloroplast RNA polymerase and may be used to study chloroplast-level DNA transcription in plants.	100 mg 250 mg 1 g 5 g 25 g	02195490
Sisomicin Sulfate, PhytoPure™ $2C_{19}H_{37}N_5O_7 \cdot 5H_2SO_4$ MW 1385.4 [53179-09-2] An aminoglycoside antibiotic active against gram positive bacteria. Sisomicin closely resembles gentamicin, but is more effective against <i>Pseudomonas aeruginosa</i> and indole-positive Proteus. It interferes with protein synthesis at the level of functional ribosome assembly.	250 mg 1 g	02156626
Spectinomycin Dihydrochloride Pentahydrate, PhytoPure™ $C_{14}H_{24}N_2O_7 \cdot 2HCl \cdot 5H_2O$ MW 495.4 [22189-32-8] An aminocyclitol antibiotic, closely related to the aminoglycosides, it inhibits protein synthesis (elongation) by interfering with peptidyl tRNA translocation. It is active against gram negative bacteria and is used as a selection agent for transformed plant cells that contain the selectable marker gene Spcr.	1 g 5 g 25 g	02194540
Streptomycin Sulfate, PhytoPure™ $2C_{21}H_{39}N_7O_{12} \cdot 3H_2SO_4$ MW 1457.4 [3810-74-0] An aminoglycoside antimycobacterial effective against both gram negative and gram positive bacteria. Widely used in combination with penicillin in a standard antibiotic cocktail to prevent bacterial infection in cell culture. Streptomycin controls bacterial and fungal diseases of certain fruits, vegetables, seeds and ornamental crops.	25 g 100 g	02194541
Vancomycin Hydrochloride, PhytoPure™ $C_{66}H_{75}Cl_2N_7O_{24} \cdot HCl$ MW 1485.7 [1404-93-9] A glycopeptide antibiotic active against gram positive bacteria. Used to block bacterial cell wall synthesis at the level of peptidoglycan biosynthesis by inhibiting incorporation of terminal D-Ala-D-Ala moieties of the NAM/NAG-peptides. Suitable for plant cell culture.	100 mg 250 mg 1 g 5 g	02195540

Antibiotics for DNA, RNA and Protein Modification

Many antibiotics are effective against bacteria because they modify, interfere with, or inhibit protein synthesis in bacterial cells. Numerous antibiotics can modify bacterial DNA and RNA, inhibit cell wall formation, cause misreading of ribosome codons, and block signal transduction. As a result, antibiotics can be valuable research tools for intentionally modifying nucleic acids, DNA and RNA. Antibiotics predominately interfere and inhibit DNA and RNA synthesis by blocking cellular enzymes like topoisomerase II (DNA gyrase) and RNA polymerase. This interference typically occurs at the 30S or 50S subunits of the 70S bacterial ribosome. Additionally, other antibiotics block peptidoglycan bacterial cell wall formation, cause premature chain termination of proteins, or act as ionophores by disrupting the cellular ionic content and destroying bacteria. Below is a selection of our numerous antibiotics useful for proteomics research due to their modifying actions on nucleic acids, DNA, RNA and protein synthesis. Looking for more antibiotics? You'll find what you need at www.mpbio.com.

Description	Size	Cat. No.
Actinomycin D, Cell Culture Reagent $C_{62}H_{86}N_{12}O_{16}$ MW 1255.5 [50-76-0] A polypeptide antibiotic with anti-cancer activity, effective against both gram positive and gram negative bacteria. It inhibits transcription by binding DNA at the transcription initiation complex and preventing elongation of RNA chains through inhibition of RNA polymerase.	2 mg 5 mg 10 mg 25 mg	02194525
Amikacin, PhytoPure™ $C_{22}H_{43}N_5O_{13}$ MW 585.6 [37517-28-5] From <i>Kanamycin A</i> . An amino-glycoside antibiotic that works by binding to the bacterial 30S ribosomal subunit, causing misreading of mRNA and leaving the bacterium unable to synthesize proteins vital to its growth. It is effective against gram negative bacteria, fungi and mycobacteria.	250 mg 1 g 5 g	02150342
Anisomycin $C_{14}H_{19}NO_4$ MW 265.3 [22862-76-6] From <i>Streptomyces griseolus</i> . Anisomycin is a pyrrolidine antibiotic that interferes with protein and DNA synthesis by inhibiting peptidyl transferase and the 80S ribosome system. Also induces apoptosis in promyelocytic leukemia cells, ventricular myocytes, and colon adenocarcinoma cells.	10 mg 25 mg 50 mg	02159881
Bleomycin Sulfate, NeuroPure™ $C_{55}H_{85}N_{17}O_{25}S_4$ MW 1512.6 [9041-93-4] A glycopeptide antitumor antibiotic. Induces apoptosis through oxidative stress and DNA damage of single strand breaks, double strand breaks and apurinic/aprimidinic modifications. Also degrades RNA.	1 mg 5 mg 10 mg	02180833
Chromomycin A3, NeuroPure™ $C_{57}H_{82}O_{26}$ MW 1183.2 [7059-24-7] An anthraquinone glycosidic antibiotic effective against both gram positive and gram negative bacteria and fungi. It inhibits DNA and RNA polymerases, disrupting protein synthesis. Also useful as a DNA fluorescent stain.	1 mg 5 mg 10 mg	02180938
Doxorubicin Hydrochloride $C_{27}H_{29}NO_{11} \cdot HCl$ MW 580.0 [25316-40-9] An anthracycline antitumor antibiotic that is an antitumor, chemotherapeutic and immunosuppressive agent. It blocks RNA polymerase and reverse transcriptase, and also inhibits nucleic acid synthesis.	1 mg 5 mg 10 mg 50 mg	02159101
Doxycycline Monohydrate, NeuroPure™ $C_{22}H_{24}N_2O_8 \cdot H_2O$ MW 462.4 [17086-28-1] A synthetic tetracycline that inhibits angiogenesis and matrix metalloproteases. Has been shown to reduce the in vitro growth of human breast and prostate cancer cells. Also inhibits the inflammatory response to Lyme's Disease. It inhibits bacterial protein synthesis by blocking the interaction of aminoacyl-tRNA and the bacterial ribosome	500 mg 1 g 5 g	02180839

Description	Size	Cat. No.
Doxycycline Hyclate, USP $C_{22}H_{25}ClN_2O_8 \cdot 1/2C_2H_6O \cdot 1/2H_2O$ MW 512.9 [24390-14-5] A synthetic oxytetracycline derivative. It inhibits the inflammatory response to the Lyme's Disease and is a broad spectrum inhibitor of matrix metallo-proteinases. Useful in cell culture for studies on wound healing and tissue remodeling.	1 g 5 g 10 g 25 g	02198955
Erythromycin, Cell Culture Reagent $C_{37}H_{67}NO_{13}$ MW 733.9 [114-07-8] A macrolide antibiotic that inhibits bacterial protein synthesis. It binds to the 50S subunit of the bacterial 70S rRNA complex, thus blocking aminoacyl translocation and tRNA transfer.	1 g 5 g	02194529
Geldanamycin, NeuroPure™ $C_{29}H_{40}N_2O_9$ MW 560.6 [30562-34-6] Inhibits heat shock protein 90 (HSP90) and binds to its ATP site. Exhibits anti-proliferative effects on breast cancer cells. A benzoquinone ansamycin antibiotic that also inhibits c-Src. A potent inhibitor of pp60src tyrosine kinase and c-myc gene expression in murine lymphoblastoma cells.	1 mg 5 mg 10 mg	02194175
Kanamycin Sulfate, PhytoPure™ $C_{18}H_{36}N_4O_{11}$ MW 582.6 [25389-94-0] From <i>Streptomyces kanamyceticus</i> . An aminoglycoside bacteriocidal antibiotic that acts against gram positive and gram negative bacteria. Inhibits protein biosynthesis by causing a misreading of the 70S-ribosome. Useful in plant cell culture for selection of the kanamycin-resistance gene.	1 g 5 g 25g	02194531
Lincomycin Hydrochloride $C_{18}H_{34}N_2O_6 \cdot HCl$ MW 443.0 [859-18-7] A lincosamide antibiotic primarily active against gram positive bacteria including pathogenic Streptococci, Staphylococci, and Mycoplasma. It binds to the 50S subunit of bacterial ribosomes and suppresses protein synthesis. Also inhibits bacterial protein synthesis by forming cross-links within the peptidyl transferase loop region of the 23S rRNA.	1 g 5 g	02158948
Lomefloxacin Hydrochloride, NeuroPure™ $C_{17}H_{19}F_2N_3O_3 \cdot HCl$ MW 387.8 [98079-52-8] A fluoroquinolone antibiotic effective against both gram positive and gram negative bacteria. It inhibits bacterial DNA gyrase (topoisomerase II) and topoisomerase IV, thus disrupting DNA transcription and replication.	500 mg 1 g 5 g	02180849
Mithramycin A $C_{52}H_{76}O_{24}$ MW 1085.2 [18378-89-7] An antineoplastic antibiotic produced by <i>Streptomyces plicatus</i> . It is an RNA synthesis inhibitor. It cross-binds chromatin GC-rich promoter motifs, thereby inhibiting gene transcription. It is used in multiple areas of research, including cancer cell apoptosis and as a metastasis inhibitor.	1 mg 5 mg	02191240
Mitomycin C $C_{15}H_{18}N_4O_5$ MW 334.3 [50-07-7] An aziridine antineoplastic antibiotic that inhibits DNA synthesis and induces apoptosis. Mitomycin C is a potent DNA crosslinker with high specificity for the guanine nucleoside sequence 5'-CpG-3'. It has strong antitumor activity and is used in cell culture to generate mitotically inactive feeder cells.	2 mg 10 mg 20 mg	02100498
Monensin Sodium Salt $C_{36}H_{61}O_{11}Na$ MW 692.9 [22373-78-0] A polyether antibiotic effective against gram-positive and gram negative bacteria, fungi and yeasts. It acts as a sodium ionophore and blocks intracellular protein transport. It disrupts Golgi apparatus structure and inhibits vesicular transport in eukaryotic cells and induces apoptosis in HL-60 cells.	500 mg 1 g	02190241

Antibiotics for DNA, RNA and Protein Modification

Description	Size	Cat. No.
<p>Nafcillin Sodium Salt Monohydrate, NeuroPure™ $C_{21}H_{21}N_2O_5Na \cdot H_2O$ MW 454.5 [7177-50-6]</p> <p>A narrow-spectrum β-lactam antibiotic of the penicillin class, predominantly active against gram positive bacteria. It is used to study penicillin-binding proteins (PBPs). By inhibiting PBPs, cell wall formation is blocked via preventing the final crosslinking (transpeptidation) of the nascent peptidoglycan layer.</p>	250 mg 1 g 5 g	02180939
<p>Novobiocin Sodium Salt $C_{31}H_{35}N_2NaO_{11}$ MW 634.6 [1476-53-5]</p> <p>An aminocoumarin antibiotic primarily active against gram positive bacteria. It is a potent inhibitor of bacterial DNA-gyrase (Topoisomerase II) by blocking the GyrB subunit of Topoisomerase involved in energy transduction. It also inhibits the retrovirus RNA-dependent DNA-polymerase. Useful for heat shock protein inhibition studies and to produce positively supercoiled plasmid DNA.</p>	1 g 5 g 25 g 100 g	02155957
<p>Oxacillin Sodium Salt, NeuroPure™ $C_{19}H_{18}N_3NaO_5S$ MW 423.4 [1173-88-2]</p> <p>A narrow-spectrum β-lactam antibiotic of the penicillin class active against gram positive bacteria, similar to nafcillin. It inhibits bacterial cell wall synthesis by blocking the penicillin-binding proteins (PBP) needed to form peptidoglycans. Also used to study mechanisms of penicillinase resistance.</p>	1 g 5 g	02180940
<p>Puromycin Dihydrochloride, Cell Culture Reagent $C_{22}H_{29}N_7O_5 \cdot 2HCl$ MW 544.4 [58-58-2]</p> <p>An aminonucleoside antibiotic that is toxic to both prokaryotic and eukaryotic cells. It causes premature chain termination in protein synthesis and is widely used in cell culture as a selection agent.</p>	10 mg 25 mg 100 mg	02194539
<p>Rapamycin $C_{51}H_{79}NO_{13}$ MW 914.2 [53123-88-9]</p> <p>(Sirolimus). A macrolide immunosuppressant antibiotic that interferes with signal transduction pathways. It blocks cytokine-mediated signalling and activates P70 S6 kinase. Also suppresses B & T cell activation.</p>	100 μ g 1 mg	02159346
<p>β-Rubromycin, NeuroPure™ $C_{27}H_{20}O_{12}$ MW 536.4 [27267-70-5]</p> <p>A quinone antibiotic that is a selective, reversible HIV-1 reverse transcriptase inhibitor. It is also a Telomerase inhibitor that displays anticancer potential, decreasing the proliferation of cancer cells in vitro.</p>	1 mg 5 mg	02180941
<p>Spectinomycin Dihydrochloride Pentahydrate, Cell Culture Reagent $C_{14}H_{24}N_2O_7 \cdot 2HCl \cdot 5H_2O$ MW 495.4 [22189-32-8]</p> <p>An aminocyclitol antibiotic, closely related to the aminoglycosides, it inhibits protein synthesis (elongation) by interfering with peptidyl tRNA translocation. It is active against gram negative bacteria and is used as a selection agent for transformed plant cells that contain the selectable marker gene Spcr.</p>	1 g 5 g 25 g	02194540
<p>Streptomycin Sulfate, PhytoPure™ $2C_{21}H_{39}N_7O_{12} \cdot 3H_2SO_4$ MW 1457.4 [3810-74-0]</p> <p>An aminoglycoside antimycobacterial effective against both gram negative and gram positive bacteria. Widely used in combination with penicillin in a standard antibiotic cocktail to prevent bacterial infection in cell culture. Streptomycin controls bacterial and fungal diseases of certain fruits, vegetables, seeds and ornamental crops.</p>	25 g 100 g	02194541
<p>Tetracycline Hydrochloride, Cell Culture Reagent $C_{22}H_{24}N_2O_8 \cdot HCl$ MW 480.9 [64-75-5]</p> <p>Antibiotic effective against gram positive and gram negative bacteria. Inhibits protein synthesis by binding to the 30S subunit and blocking attachment of aminoacyl-tRNA. Induces apoptosis in osteoblasts.</p>	1 g 5 g	02194542
<p>Vancomycin Hydrochloride, PhytoPure™ $C_{66}H_{75}Cl_2N_9O_{24} \cdot HCl$ MW 1485.7 [1404-93-9]</p> <p>A glycopeptide antibiotic active against gram positive bacteria. Used to block bacterial cell wall synthesis at the level of peptidoglycan biosynthesis by inhibiting incorporation of terminal D-Ala-D-Ala moieties of the NAM/NAG-peptides. Suitable for plant cell culture.</p>	100 mg 250 mg 1 g 5 g	02195540

Antibiotics Selection Guide

Name	Antibiotic Type	Item #	Gram positive Bacteria	Gram negative Bacteria	Fungi	Yeasts	Mycoplasma	Modify DNA, RNA
Acivicin	Antineoplastic	02180826	•					
Actinomycin D	Polypeptide	02194525	•					•
Alamethicin	Polypeptide	02180827	•	•				
Amikacin	Aminoglycoside	02150342		•	•		•	•
Amoxicillin	β-Lactam penicillin	02190145	•	•				
Amphotericin B	Polyene	02195043			•	•		
Ampicillin	β-Lactam penicillin	02194526	•	•				
Anisomycin	Pyrrolidine	02159881	•	•				•
Antibiotic A 23187	Divalent Ionophore	02180773	•		•			
Azithromycin	Macrolide	02180830	•	•				•
Bacitracin	Polypeptide	02180934	•	•				
Blasticidin S Hydrochloride	Aminonucleoside	02150477	•	•				•
Bleomycin Sulfate	Aminoglycoside	02180833	•	•				•
Capreomycin Sulfate	Polypeptide	02154924	•	•				•
Carbenicillin	Carboxypenicillin	02195092		•				
Cefazolin	Cephalosporin	02154946	•	•				
Cefotaxime	Cephalosporin	02154947	•	•				
Cerulenin	Polypeptide	02180874			•			
Chloramphenicol	Chloramphenicol	02190321	•	•			•	•
Chromomycin A3	Glycoside	02180938	•	•	•			•
Ciprofloxacin	Fluoroquinone	02199020	•	•				•
Dihydrostreptomycin Sulfate	Aminoglycoside	02194528	•	•				•
Doxorubicin Hydrochloride	Anthracycline	02159101	•	•				•
Doxycycline Hyclate	Tetracycline	02198955	•	•	•	•		•
Doxycycline Monohydrate	Tetracycline	02180839	•	•	•	•		•
Enrofloxacin	Fluoroquinone	02199019	•	•				•
Erythromycin	Macrolide	02194529	•	•			•	•
Fosmidomycin	Phosphonic	02180936	•	•				
G418 Disulfate	Aminoglycoside	02180937	•	•	•	•	•	•
Geldanamycin	Benzoquinone	02194175	•	•				
Gentamycin Sulfate	Aminoglycoside	02194530		•			•	•
Hygromycin B	Aminoglycoside	02194175	•		•	•	•	
Kanamycin Sulfate	Aminoglycoside	02194531	•	•			•	•
Lincomycin Hydrochloride	Lincosamide	02158948	•					•
Lomefloxacin Hydrochloride	Fluoroquinone	02180849	•	•				•
Mithramycin A	Antineoplastic	02191240	•	•				•
Mitomycin C	Antineoplastic	02100498	•	•				•
Monensin	Polyether	02190241	•	•	•	•		
Nafcillin	β-Lactam penicillin	02180939	•					
Neomycin Sulfate	Aminoglycoside	02180610		•		•		•
Norfloxacin	Fluoroquinone	02155949	•	•				•
Novobiocin	Aminocoumarin	02155957	•					•
Nystatin	Polyene	02194534			•	•		
Oxacillin	β-Lactam penicillin	02180940	•					
Oxytetracycline Hydrochloride	Tetracycline	02150145	•	•				•
Paromomycin Sulfate	Aminoglycoside	02194535	•	•				•
Penicillin G Potassium Salt	Penicillin	02194536	•					
Penicillin G Sodium Salt	Penicillin	02194537	•					
Polymixin B Sulfate	Polypeptide	02194538		•				
Puromycin Dihydrochloride	Aminonucleoside	02194539	•		•			
Rapamycin	Macrolide	02159346			•	•		
Rifampin	Rifamycin	02195490					•	•
β-Rubromycin	Quinone	02180941	•	•				
Sisomicin Sulfate	Aminoglycoside	02156626	•					
Spectinomycin Dihydrochloride	Aminocyclitol	02194540	•	•				•
Streptomycin Sulfate	Aminoglycoside	02194541	•	•			•	
Tetracycline Hydrochloride	Tetracycline	02194542	•	•			•	•
Tylosin Tartrate	Macrolide	02193454	•				•	
Vancomycin Hydrochloride	Glycopeptide	02195540	•					•



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