



ReAction No.2

Selected Life Science products 2014

Mycoplasma control in cell culture

Mycoplasma species remain a constant threat in cell culture. The parasitic bacteria lacking a cell wall are a serious risk, both in terms of research results and with respect to biopharmaceuticals such as vaccines or cell therapy. The good news is, with simple rules of behavior and precautions the teases can be banished from the laboratory. **The key to a mycoplasma-free cell culture lies in applied good laboratory practice, comprehensive prevention, and frequent controls.**

Cell culture-based research: New standards for publishing it!

The overpowering presence of mycoplasma in our cell culture laboratories is a challenge for scientists. The tiny parasite is a major problem in all cell culture-related areas of research and industry. Unfortunately, some researchers still do not seem to be aware of how easily a cell line is contaminated by microorganisms or other cell types. Careless handling, routine use of antibiotics, and a lack of testing are the main causes leading to infected cell lines and cross contaminations. Due to the intensive exchange of cells and materials within

the scientific community contaminated or falsely identified cell lines could easily spread. A growing number of scientific publishers and editors now request authors to state that they have checked their cells for authenticity and potential contaminants.

**Need more information on this topic?
Please contact our experts at
service@de.applichem.com**

A clean laboratory is essential to prevent contamination of any kind, whether it is bacteria or fungi. Cleaning and disinfecting surfaces, instruments and hands is essential – both, before and after each experiment. While most surfaces are relatively easy to clean (smooth texture and good accessibility), for many devices scrupulous cleanliness is hardly achieved. Unfortunately, the warm and humid air in the CO₂-incubator offers best conditions for colonization by various bacteria and fungi. The solution: Incubator-Clean™ spray. This product effectively prevents the growth of fungi (including spores), bacteria (including spores, mycoplasma species and tuberculosis bacteria), and viruses (including HIV and Hepatitis B). The active component is a combination of different quaternary benzyl ammonium compounds which is non-toxic and biodegradable. The solution contains no mercury or formaldehyde, no phenol or alcohol. Incubator-Clean™ is non-corrosive to aluminum, tin-coated iron, chromium, nickel, steel, stainless steel and copper, and therefore does not affect the life time of the incubator. To prevent any contaminations,

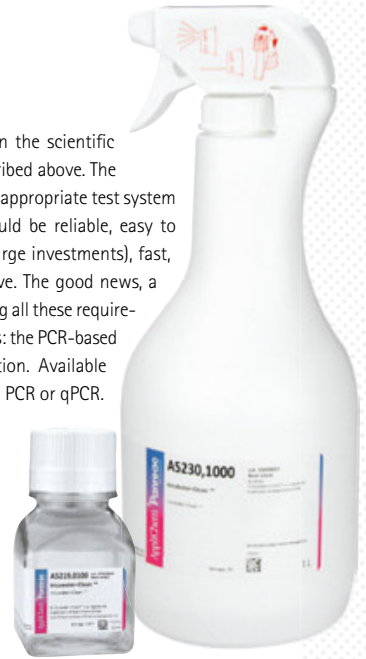
Incubator-Clean™ should be applied every two weeks. It is not even necessary to clear the incubator for the treatment: since the active substances are not volatile, the cell cultures will not be harmed. Another advantage: the clean bench can be kept sterile with Incubator-Clean™ too. Simply spray and let dry. Ready!

There is one problem left to refer to: the incubator water reservoir. Hot water is a potential source of contaminations which can spread quickly throughout the incubator. To disinfect the water you need a disinfectant that does not attack the stainless steel tank. And it should be non-toxic (i.e. safe for humans and the environment, easy to dispose of), non-volatile and highly effective of course. We therefore recommend the preservative Incuwater-Clean™, a concentrated solution added to the water bath. Incuwater-Clean™ is optimized for use in CO₂-incubator and effectively inhibits the growth of molds, yeasts and bacteria.

Conclusion: Our dream team Incubator-Clean™ and Incuwater-Clean™ provides the perfect solution for keeping the incubator sterile! Both products are highly active against unwanted contaminants while being non-toxic, non-corrosive and biodegradable.

Despite all precautions and cleanliness; it is virtually impossible to completely eliminate mycoplasma contaminations. The reason: people working in the lab. One of the most common cell culture contaminating mycoplasma species is mycoplasma orale that originally comes from the human oral cavity. Therefore, routine testing of cell lines should be performed as a matter of course. Mycoplasma tests are mandatory as well in industrial quality

management and in the scientific community as described above. The requirements on an appropriate test system are high: tests should be reliable, easy to perform (without large investments), fast, specific and sensitive. The good news, a test system matching all these requirements actually exists: the PCR-based mycoplasma detection. Available as a kit for standard PCR or qPCR.



Mycoplasma Control

Description	Order No.	Quantity
Incubator-Clean™ Disinfectant solution for incubators and sterile benches	A5230,0500	500 ml
	A5230,1000	1 L
	A5230,5000RF	5 L
Incuwater-Clean™ 100X concentrated disinfectant solution for CO ₂ -incubator water baths	A5219,0100	100 ml
PCR Mycoplasma Test Kit II Lyophilized PCR Mix for the detection of mycoplasma in cell culture by conventional PCR. Requires additionally Hotstart polymerase (e.g. SuperHot Taq-DNA-Polymerase A5231)	A8994,0025	25 tests
	A8994,0050	50 tests
	A8994,0100	100 tests
qPCR Mycoplasma Test Kit Lyophilized PCR kit for the detection of mycoplasma in cell culture by real-time/qPCR. Requires additionally Hotstart polymerase (e.g. SuperHot Taq-DNA-Polymerase A5231)	A9019,0025	25 tests
	A9019,0100	100 tests
SuperHot Taq DNA Polymerase	A5231,0200	200 Units
New! PCR Mycoplasma Test Kit I Lyophilized PCR Mix for the detection of mycoplasma in cell culture by conventional PCR. Includes Hotstart Taq DNA polymerase and internal amplification control	A9753,0025	25 tests

4 ReAction No.2 Antibiotics



PCR Mycoplasma Test Kit
A8994,0025

How do the PCR-based mycoplasma test kits work?

The basic principle is simple: a specific primer set exclusively amplifying mycoplasma DNA is used. The primers pair binds to the highly conserved 16S rRNA gene operon of the mycoplasma genome. Only if mycoplasma DNA is present in the sample (which typically consists of some micro liters of the cell culture supernatant) a mycoplasma specific PCR product of a defined size (270 bp) is obtained. This DNA fragment is then visualized by agarose gel electrophoresis, or directly through the FAM detection channel in the case of using the qPCR assay kit. The entire procedure of mycoplasma detection only takes about 2–3 hours and provides absolutely reliable results. Responsibility for its reliability is not only the high sensitivity and specificity of the kit, but also an internal control DNA, which is added to the PCR reaction. Thanks to this internal control, false-negative results (for example caused by an inhibition of the PCR reaction) are excluded.

Antibiotics

Description	Order No.	Quantity
Amphotericin B (Ph. Eur.) pure, pharma grade	A7009,0001	1 g
Blasticidin S Hydrochloride <i>BioChemica</i>	A3784,0005	5 mg
	A3784,0025	25 mg
CellCultureGuard Sterile 100X solution to prevent microbial contamination of cell culture. Employs novel antibiotics. Targets bacteria (including mycoplasma), protozoa, yeasts and other fungi	A8906,0050	50 ml
Ciprofloxacin Hydrochloride (Ph. Eur.) pure, pharma grade	A4556,0005	5 g
Gentamycin Sulfate (Ph. Eur.) pure, pharma grade	A4854,0025	25 g
	A6798,0020	20 ml
G418 Disulfate – Solution, sterile	A6798,0050	50 ml
	A2175,0005	5 ml
Hygromycin B – Solution	A2175,0025	25 ml
	A3811,0005	5 g
Nystatin 2-hydrate <i>BioChemica</i>	A3811,0025	25 g
	A8943,0100	100 ml
Penicillin – Streptomycin (100X) for cell culture	A0890,0005	5 g
Polymyxin B Sulfate <i>BioChemica</i>	A0890,0010	10 g
	A2856,0010	10 mg
Puromycin Dihydrochloride <i>BioChemica</i>	A2856,0100	100 mg

Cell Culture Products

Description	Order No.	Quantity
AC-Trypsin – Solution for cell culture Ready to use solution for cell dissociation/ disaggregation of adherent cells. Contains crystalline trypsin and additives to protect the cells	A8336,0500	500 ml
Glucose anhydrous for cell culture	A0883,1000	1 kg
	A0883,5000	5 kg
Sucrose for cell culture	A2188,1000	1 kg
Iron(III) Citrate hydrate for cell culture	A5175,0100	100 g
Fibronectin – Solution for cell culture	A8350,0005	5 ml
Glycerol anhydrous for cell culture	A3092,0500	500 ml
Alanil-L-Glutamine for cell culture	A3198,0100	100 g
Glutamine for cell culture	A3704,0100	100 g
Linoleic Acid for cell culture	A4778,0010	10 g
Sodium Chloride – Solution (0.9%), sterile	A1671,0500	500 ml
	A1671,1000	1 L
Sodium Chloride for cell culture	A4256,1000	1 kg
	A0384,1000	1 kg
Sodium Hydrogen Carbonate for cell culture	A0384,5000	5 kg



G418 Disulfate – Solution, sterile
A6798,0050



Iron(III) Citrate hydrate
A5175,0100



Best conditions for good results!

Salts and Buffers

Description	Order No.	Quantity
PBS buffer (1X, Dulbecco's) – Powder	A0964,9050	50 L
PBS tablets pH 7.4 (for 1 L)	A9201,0100	100 Tabs
Tris for buffer solutions	A1379,1000	1 kg
HEPES for buffer solutions	A1069,0250	250 g
	A1069,1000	1 kg
MOPS for buffer solutions	A1076,0250	250 g
	A1076,0500	500 g
MES 1-hydrate for buffer solutions	A1074,0250	250 g
CAPS for buffer solutions	A1063,0100	100 g
Ammonium Acetate <i>BioChemica</i>	A3674,1000	1 kg
Ammonium Sulfate <i>BioChemica</i>	A1032,1000	1 kg
Sodium Acetate 3-hydrate <i>BioChemica</i>	A1045,1000	1 kg
Sodium Hydroxide pellets <i>BioChemica</i>	A3910,1000	1 kg
Magnesium Sulfate 7-hydrate <i>BioChemica</i>	A4101,1000	1 kg
Potassium Hydrogen Phosphate anhydrous <i>BioChemica</i>	A1042,1000	1 kg
Potassium Chloride <i>BioChemica</i>	A1039,1000	1 kg
Sodium Chloride <i>BioChemica</i>	A1149,5000	5 kg



PBS tablets pH 7.4 (for 1 L) A9201,0100

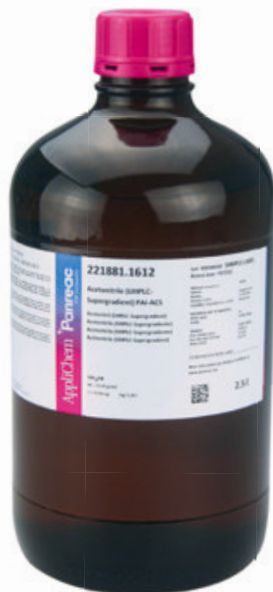
Solvents that meet highest requirements in quality

The solvents **"for HPLC"** are optimized for use in modern instrumental analysis and subject to the strictest quality guidelines. These products are tightly controlled in our analytical laboratory. Our quality control includes recording of IR and UV spectra to determine the suitability for IR spectroscopy, HPLC and UV spectroscopy applications. We also guarantee a very high assay level (typically 99.9%) with minimal evaporation residue and water content. All these solvents are filtered (0.2 microns) in order to guarantee a minimum level of particles. In order to maintain an optimum quality level during storage and for a better conservation, all these solvents are bottled under nitrogen atmosphere.

The range of high purity solvents **"for pesticide analysis"** has been exclusively developed for the analysis of traces of pesticides in food and environmental samples, for example in drinking water. This solvent quality is continuously checked by gas chromatography using ECD and FID detectors. Also the packaging reflects highest quality: all products for residue analysis are exposed to glass and Teflon only.

Over the last years, the development of Ultra High Performance Liquid Chromatography (UHPLC) has led to a significant increase in terms of analysis speed, sensitivity and resolution. These advantages are the result of significant improvements in the technology of those units (detectors, automated injectors, pumps, columns, etc.) and the reason for a growing number of laboratories employing the UHPLC technology. In order to guarantee and maintain the outstanding analytical performance of the expensive equipment, it is recommended to use appropriate high purity solvents to avoid their interfering with analysis. PanReac AppliChem now offers acetonitrile, methanol and water with improved specifications **"for the UHPLC Supergradient"**, which are characterized by a further reduction of non-volatile matter content, improved transparency at low wavelengths, and control of baseline drift.

The liquid chromatography – mass spectrometry (LC-MS) technique is being used by an increasing number of analytical and research laboratories in several areas of industry (environmental, pharmaceutical and biotechnology laboratories). Due to its high sensitivity and selectivity, the LC-MS is the suitable technique for the identification and quantification of a large number of compounds in the most complex matrix. All PanReac AppliChem solvents **"for LC-MS"** are characterized by a very low concentration (<100ppb) of metals such as sodium and potassium and show an excellent signal-to-noise ratio.



Acetonitrile for UHPLC Supergradient 221881.1612

Solvents for Instrumental Analysis

Description	Order No.	Quantity
Acetone for pesticide analysis	321007.1612	2,5L
Acetonitrile for pesticide analysis, ACS	321881.1612	2,5L
Cyclohexane for pesticide analysis	321250.1612	2,5L
Hexane 95% for pesticide analysis	323242.1612	2,5L
Methanol for pesticide analysis	321091.1612	2,5L
Acetone for UV, IR, HPLC, GPC, ACS	361007.1612	2,5L
Cyclohexane for UV, IR, HPLC, ACS	361250.1612	2,5L
Dichloromethane stabilized with ~ 20ppm of amylene for UV, IR, HPLC, GPC, ACS	361254.1612	2,5L
Methanol for UV, IR, HPLC, ACS	361091.1612	2,5L
Propanol for HPLC	361090.1612	2,5L
Water for UV, HPLC, ACS	361074.1612	2,5L
Acetonitrile for UHPLC Supergradient, ACS	221881.1611	1L
	221881.1612	2,5L
Methanol for UHPLC Supergradient, ACS	221091.1611	1L
	221091.1612	2,5L
Water for UHPLC Supergradient	221074.1612	2,5L
	701881.1611	1L
Acetonitrile for LC-MS	701881.1612	2,5L
	701091.1612	2,5L
Methanol for LC-MS	701091.1612	2,5L
Water for LC-MS	701074.1612	2,5L

Run Gel Run!

Polyacrylamide Gel Electrophoresis

What is „4K“?

The number 4 stands for the number of crystallization ("K") steps applied to purify our superior acrylamide and bisacrylamide. 4K quality is four times crystallized. With every single step we reduce the trace amounts of unwanted substances such as acrylic acid or heavy metals – until nothing's left that could probably interfere with electrophoresis.

SDS-PAGE (polyacrylamide gel electrophoresis)

Description	Order No.	Quantity
Acrylamide 4K – Solution (30%) – Mix 29 : 1	A0951,0500	500 ml
Acrylamide 4K – Solution (40%) – Mix 29 : 1	A0950,1000	1 L
Acrylamide 4K – Solution (30%) – Mix 37.5 : 1	A1672,0500	500 ml
	A1672,1000	1 L
Acrylamide 4K – Solution (40%) – Mix 37.5 : 1	A1577,1000	1 L
Ammonium Persulfate <i>BioChemica</i>	A1142,0250	250 g
TEMED	A1148,0100	100 ml
	A1148,0250	250 ml
SDS – Solution 10% for molecular biology	A0676,1000	1 L
SDS – Solution 20% for molecular biology	A0675,0500	500 ml
SDS-Tris-Glycine buffer (10X) <i>BioChemica</i>	A1415,1000	1 L
Tris-Glycine buffer (10X) <i>BioChemica</i>	A1418,1000	1 L
DTT <i>BioChemica</i>	A1101,0010	10 g
Mercaptoethanol <i>BioChemica</i>	A4338,0250	250 ml
Coomassie® Brilliant Blue G-250 (C.I. 42655)	A3480,0010	10 g
Protein Marker I (14 – 116)	A5238,0500	500 µl
Protein Marker II (6.5 – 200) prestained	A5418,0250	250 µl
Protein Marker III (6,5 – 200)	A4402,0001	1 ml
Protein Marker IV (10 – 150)	A3993,0500	500 µl
Protein Marker VI (10 – 245) prestained	A8889,0500	500 µl

Size estimation of apparent molecular weight by SDS PAGE:

Prestained protein markers are not recommended for precise determination of the molecular weight size since their behavior during electrophoresis strongly depends on electrophoresis conditions. For exact determinations of protein sizes use unlabeled marker proteins, such as our non-prestained markers.

Protein Marker III (6,5 – 200) (A4402) on a Tris-glycine buffered gradient gel (4 – 20% AA) stained with Coomassie

Protein	[kDa]
Myosin	212
β-Galactosidase	116
BSA	66
Ovalbumin	45
Carbonic anhydrase	29
Trypsin inhibitor (soy bean)	20
Lysozyme	14
Aprotinin (bovine lung)	6,5

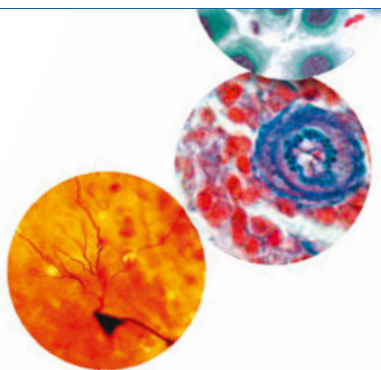
Reagents for Clinical Diagnosis

Histology, Hematology and Microbiology

We are providing a full range of products, which includes all commonly used reagents in the process of sample preparation for microscopic examinations. All the stages of fixing, clearing, paraffin inclusion, staining, and mounting are covered.

Histology

Description	Order No.	Quantity
Formaldehyde 3,7 – 4,0% buffered to pH=7 and stabilized with methanol for clinical diagnosis	252931.1214	5L
	252931.1315	10L
Histofix® Preservative ready to use for clinical diagnosis	256462.0955	44 x 20 ml
	256462.0962	45 x 30 ml
	256462.0961	45 x 40 ml
	256462.0967	24 x 75 ml
Xylene – Mixture of isomers for clinical diagnosis	256462.0943	16 x 125 ml
	251769.2711	1L
	251769.2714	5L
Paraffin M.P. 55–58°C plasticized + DMSO pellets for clinical diagnosis	256993.0933	6 x 1 kg
	256993.0415	10 kg
Ethanol absolute for clinical diagnosis	251086.1214	5L
	251086.1215	10L



Histofix®

3.7 – 4.0% Formaldehyde solutions indicated for use as a preservative and fixative in pathological anatomy. Available in polypropylene bottles of various sizes, with pre-dosed formaldehyde for rapid and convenient use and perfect air-tight seal to ensure high sample stability. Histofix® is a neutral solution, buffered with sodium phosphate at pH 7, stabilized with methanol to prevent potential oxidation phenomena and to enhance preservation of the samples.



Histofix® Preservative ready to use for clinical diagnosis (256462): The upper part of the container has a safety ring to facilitate pouring and prevent dripping on the outside. In compliance with CE marking requirements for health products used for in vitro diagnostics.

Inclusion Paraffins

PanReac AppliChem Paraffins for inclusion cover different melting points.



Paraffin M.P. 55–58°C plasticized + DMSO pellets for clinical diagnosis (256993): Embedding medium for preparation of fixed and dehydrated human tissue samples



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