

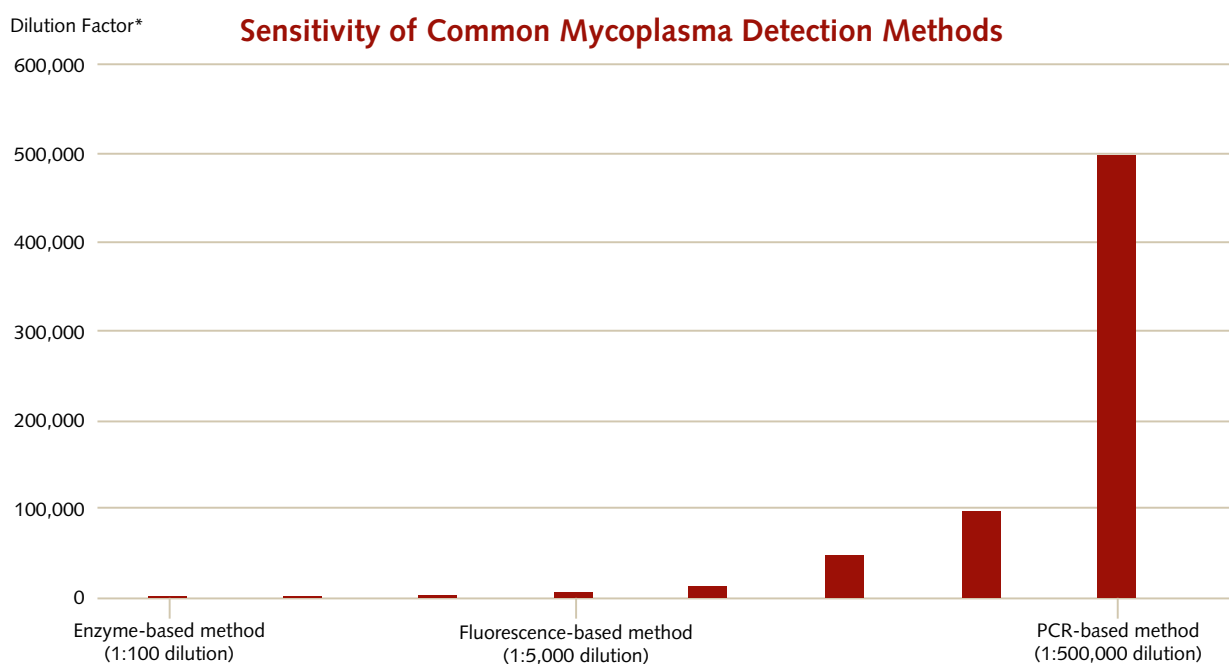
MYCOPLASMA DETECTION KITS

Mycoplasma Detection

Mycoplasma contamination of cell cultures is a very common and serious problem, even though it often remains unnoticed. In most cases, visual detection of such contaminations or detection using a normal light microscope is impossible. Standard antibiotics commonly used in cell culture (e.g. Pen/Strep) do not protect from mycoplasma contamination. Although mycoplasmas do not cause visible damage to cells, the contamination often causes biochemical changes as well as changes in the immunological properties of the cells. It undeniably affects cell metabolism, cell growth in culture, cell transfection, protein and monoclonal antibody synthesis, cytokine secretion, signal transduction, virus proliferation, and even causes damage to DNA and RNA.

PromoCell's **PCR Mycoplasma Test Kits** are convenient PCR-based kits for fast, ultra-sensitive and reliable detection of contaminating mycoplasmas in various biological materials including cell cultures and virus stocks. They are very user-friendly and contain all components required for performing successful PCR tests for mycoplasma contamination – following an easy protocol for sample preparation and PCR. The kits are available for conventional PCR and Real-Time qPCR, and detect very specifically more than 20 mycoplasma and acholeplasma species with high sensitivity.

PromoCell's **PCR Mycoplasma Test Kits** are more sensitive and faster than the classical microbiological culturing methods and fluorescent staining – and also more sensitive, reliable and reproducible compared to enzyme-based assays.



* Mycoplasma-positive culture was diluted into mycoplasma-free culture medium to generate test samples with decreasing mycoplasma concentrations. The PCR-based test method showed the highest detection sensitivity which was up to 5,000-times higher than with a commonly used, well-established enzyme-based assay.

Comparison of PCR-based and Enzyme-based Mycoplasma Detection Methods

Detection Method	PCR-based Methods (PCR Mycoplasma Test Kit I/C; PromoCell)	PCR-based Methods (PCR Mycoplasma Test Kit I/RT; PromoCell)	Enzyme-based Methods
Principle	Based on amplification of mycoplasma DNA using primers which are specific for the highly conserved 16SrRNA coding region. Qualitative (conventional) PCR test which detects viable and dead mycoplasmas and is analyzed using gel electrophoresis (results within 3 hours).	Based on amplification of mycoplasma DNA using primers which are specific for the highly conserved 23SrRNA coding region. Quantitative (qPCR) test which detects viable and dead mycoplasmas and is analyzed using a real-time thermal cycler (results within 2 hours).	Based on acetate/carbamate kinase activity of viable mycoplasmas. ATP produced in acetyl-/carbamoyl phosphate metabolism is detected in a qualitative luciferase assay using a luminometer (results within 1 hour).
Sensitivity	Typically up to 100-times more sensitive than enzyme-based methods (10-20 CFU/ml)	Typically up to 100-times more sensitive than enzyme-based methods and up to 4 times more sensitive than classical PCR (~ 10 CFU/ml)	Typically 10-100 times less sensitive than PCR-based methods*
Accuracy	→ 100%	→ 100%	→ 95%
Specificity	Detects >40 mycoplasma and acholeplasma species including eight typical species** that are responsible for >98% of cell culture contaminations.	Detects >40 mycoplasma and acholeplasma species including eight typical species** that are responsible for >98% of cell culture contaminations.	Detects >40 mycoplasma and acholeplasma species including eight typical species** that are responsible for >98% of cell culture contaminations.
Reproducibility	Not dependent on variations in cell metabolism – more reproducibility.	Very robust assay, not dependent on variations in cell metabolism – more reproducibility.	Sensitivity strongly depends on cell metabolism and culture conditions – more variability.

* Note: European Pharmacopoeia 2.6.7 "Mycoplasma" requires a sensitivity of 10 CFU/ml sample which is not met by enzyme-based methods but using PCR-based methods.

** *M. hyorhinis*, *M. arginini*, *M. orale*, *M. fermentans*, *M. salivarium*, *M. hominis*, *M. pirum* and *A. laidlawii*

PromoCell's PCR Mycoplasma Detection Kits

- **High Sensitivity:** Much higher sensitivity than fluorescent staining or enzyme-based assays - detects as few as 10-20 mycoplasmas per sample
- **High Specificity:** Detects a wide range of mycoplasma species (including all mycoplasma species that are responsible for cell culture contamination) and may also identify other mollicute species belonging to the acholeplasma genus
- **High Reliability:** Internal/negative control DNA and positive control DNA optimize reproducibility and minimize operator-dependent variability of results
- **Fast and Convenient:** Easy sample preparation, simple protocols, and ready-to-use lyophilized master mix
- **Qualitative and Quantitative Analysis:** Kits available for conventional and real-time qPCR
- **Economic:** Lower pricing per test compared to enzyme-based assays

For more information and ordering please see:

www.promocell.com/portfolio/microbial-detection-elimination-prevention

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