

THIOGLYCOLLATE MEDIUM W/O INDICATOR (7160)

Intended Use

Thioglycollate Medium W/O Indicator is used for the cultivation of anaerobic microorganisms.

Product Summary and Explanation

Quastel and Stephenson found the presence of small amounts of a compound containing an –SH group (cysteine, thioglycollic acid, and glutathione) permitted “aerobic” growth of *Clostridium sporogenes*.¹ Falk, Bucca, and Simmons discovered the advantages of using small quantities of agar in detecting contaminants during sterility testing.² Brewer demonstrated the value of a small amount of agar and a reducing substance in this medium.³

Thioglycollate Medium W/O Indicator is used for cultivating and detecting microorganisms in normally sterile materials, especially those containing mercurial preservatives when the oxidation-reduction indicator is not present or required. Thioglycollate Medium w/o Indicator is the medium of choice for diagnostic testing, where lack of an indicator avoids possible toxicity to organisms.⁴

Principles of the Procedure

Thioglycollate Medium w/o Indicator supports the growth of a large variety of fastidious microorganisms having a wide range of growth requirements. The nitrogen, vitamin, and carbon sources are provided by Enzymatic Digest of Casein and Enzymatic Digest of Soybean Meal. Dextrose is the carbohydrate energy source, and Sodium Chloride maintains the osmotic balance of the medium. Sodium Thioglycollate and L-Cystine lower the oxidation-reduction potential of the medium by removing oxygen to maintain a low Eh. By creating an environment with a low Eh, the reducing agents prevent the accumulation of peroxides that can be toxic to some organisms. The sulfhydryl groups (-SH) of these compounds also neutralize the antibacterial effect of mercurial preservatives, making thioglycollate media useful in testing material containing heavy metals. Agar eliminates the need for seals because it retards dispersion of CO₂, diffusion of oxygen, and reducing substances.⁵

Formula / Liter

Enzymatic Digest of Casein	17 g
Enzymatic Digest of Soybean Meal	3 g
Dextrose.....	5.5 g
Sodium Chloride	2.5 g
L-Cystine	0.25 g
Sodium Thioglycollate.....	0.5 g
Agar	0.75 g

Final pH: 7.0 ± 0.2 at 25°C

Formula may be adjusted and/or supplemented as required to meet performance specifications.

Precautions

1. For Laboratory Use.
2. HARMFUL. Harmful if swallowed, inhaled, or absorbed through the skin. Irritating to eyes, respiratory system, and skin.

Directions

1. Dissolve 29.5 g of the medium in one liter of purified water.
2. Heat with frequent agitation to completely dissolve the medium.
3. Autoclave at 121°C for 15 minutes. Cool to room temperature.

NOTE: The prepared medium should be reduced prior to inoculation. The prepared tubes should be boiled (with caps loose) for 3 - 5 minutes and cooled before use. Alternatively, the tubes can be placed in an anaerobic environment for at least 3 hours before use.

Quality Control Specifications

Dehydrated Appearance: Powder is homogeneous, free flowing, and light beige.

Prepared Appearance: Prepared medium is clear to hazy, yellow, with no to light precipitate.

Expected Cultural Response: Cultural response in Thioglycollate Medium W/O Indicator incubated aerobically at 35 ± 2°C and examined for growth at 24 – 72 hours.

Microorganism	Approx. Inoculum (CFU)	Expected Results
<i>Bacillus subtilis</i> ATCC® 6633	10 - 300	Fair to good
<i>Bacteroides vulgatus</i> ATCC® 8482	10 - 300	Poor to fair
<i>Candida albicans</i> ATCC® 10231	10 - 300	Fair to excellent
<i>Clostridium sporogenes</i> ATCC® 11437	10 - 300	Good to excellent
<i>Micrococcus luteus</i> ATCC® 9341	10 - 300	Fair to excellent
<i>Streptococcus pyogenes</i> ATCC® 19615	10 - 300	Good to excellent

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure

Refer to appropriate references for specific procedures using Thioglycollate Medium W/O Indicator.

Results

Typically growth is visually observed in the media. Gram-negative bacilli usually grow diffusely, Gram-positive cocci exhibit puff-ball type growth and strict aerobes, such as pseudomonads and yeast, grow in a thin layer on the surface of the medium.

Storage

Store sealed bottle containing dehydrated medium at 2 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light by keeping container tightly closed.

Expiration

Refer to expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure

Due to nutritional variation, some strains may be encountered that grow poorly or fail to grow on this medium.

Packaging

Thioglycollate Medium W/O Indicator	Code No.	7160A	500 g
		7160B	2 kg
		7160C	10 kg

References

1. **Quastel and Stephenson.** 1926. General biological products standards. Fed. Regist. **21**:6109-12.
2. **Falk, C. R., H. Bucca, and M. P. Simmons.** 1939. A comparative study of the use of varying concentrations of agar in the test medium used to detect contaminants in biological products. J. Bacteriol. **37**:121-131.
3. **Brewer, J. H.** 1940. Clear liquid mediums for the "aerobic" cultivation of anaerobes. J. Amer. Med. Assoc. **115**:598-600.
4. **Harmon, S. M., D. A. Kautter, D. A. Golden, and E. J. Rhodehamel.** 1995. *Clostridium perfringens*, p. 16.01-16.06. In Bacteriological analytical manual, 8th ed. AOAC International, Gaithersburg, MD.
5. **MacFaddin, J. F.** 1985. Media for isolation-cultivation-identification maintenance of medical bacteria, vol. 1, p. 755-762. Williams & Wilkins, Baltimore, MD.

Technical Information

Contact Acumedia Manufacturers, Inc. for Technical Service or questions involving dehydrated culture media preparation or performance at (517)372-9200 or fax us at (517)372-2006.



