PRODUCT SPECIFICATION SHEET

Wilson Blair Agar w/BG (DM690)

Intended Use

Wilson Blair Agar w/BG (DM690) is used for the isolation and preliminary identification of *Salmonella typhi* from clinical specimen.

Product Summary and Explanation

Wilson and Blair Agar was formulated by Wilson and Blair[1] for isolating Salmonella species especially Salmonella serotype *Typhi* from clinical specimens. Salmonellosis continues to be an important public health problem worldwide. The Salmonellae constitute the most taxonomically complex group of bacteria among Enterobacteriaceae.[2] Infection with non-typhi Salmonella often causes a mild, self-limiting illness. Typhoid fever, caused by Salmonella typhi, is characterized by fever, headache, diarrhea, abdominal pain, and can result in fatal respiratory, hepatic, and or neurological damage.[3] This infection can result from the consumption of raw, undercooked, or improperly processed foods contaminated with Salmonella spp. Four clinical types of Salmonella infections may be distinguished[4] namely gastroenteritis, bacteremia or septicemia, enteric fever and a carrier state.

Wilson and Blair Agar is recommended by various Associations[6-10] for the isolation and preliminary identification of *Salmonella typhi* and other Salmonellae from pathological materials, sewage, water, food and other products. The typhoid organism grows luxuriantly on the medium, forming characteristic black colonies. Gram-positive bacteria and coliforms are inhibited on Wilson and Blair Agar. The inhibitory action of Wilson and Blair Agar permits the use of a large inoculum, increasing the possibility of recovering pathogens that may be present in small numbers. Wilson and Blair Agar is generally accepted for routine detection of most *Salmonella* spp. Wilson and Blair Agar is a standard methods medium for industrial applications and the clinical environment.

Principles of the Procedure

Peptic digest of animal tissue and beef extract provide sources of nitrogen, carbon, and vitamins required for organism growth. Dextrose is the carbohydrate present in Wilson and Blair Agar. Disodium phosphate is the buffering agent. Bismuth sulfite indicator and Brilliant Green are complementary, inhibiting gram-positive bacteria and coliforms, allowing *Salmonella* spp. to grow. Ferrous Sulfate is used for H_2S production. When H_2S is present, the iron in the formula is precipitated, and positive cultures produce the characteristic brown to black color with metallic sheen.

Formula / Liter

Ingredients	Gms / Litre
Peptic digest of animal tissue	10.00
Beef extract	5.00
Dextrose	5.00
Disodium phosphate	4.00
Ferrous sulphate	0.30
Bismuth sulphite indicator	8.00
Brilliant green	0.025
Agar	20.00
Final pH: 7.7 ± 0.2 at 25°C	
Formula may be adjusted and/or supplemented as required to meet performance specifications	

Precautions

1. For Laboratory Use only.
2. HARMFUL. Harmful if swallowed, inhaled, or absorbed through the skin. May cause allergic reaction and breathing difficulties. Irritating to eyes, skin, and respiratory system.

Directions

1. Suspend 52.32 grams of the medium in one liter of distilled water.
2. Heat gently with frequent agitation until the medium is dissolved completely.

3. DO NOT AUTOCLAVE. Cool to 50-55°C.
4. Mix well to disperse precipitate and pour thick plates (25 ml medium per plate).
5. Dry the plates before use, avoiding over drying.

Quality Control Specifications

Dehydrated Appearance	Greenish yellow colored, homogeneous free flowing powder
Prepared Medium	Light yellow coloured clear to slightly opalescent gel forms in petri plates
Reaction of 5.32% Solution	pH 7.7 ± 0.2 at 25°C
Gel Strength	Firm, compared to 2.0% Agar Gel

Expected Cultural Response: Cultural response on Wilson Blair Agar w/BG observed after incubation at 35-37°C for 24-48 hours.

Sr. No.	Organisms	Inoculum (CFU)	Growth	Recovery	Colour of Colony
1.	*Escherichia coli ATCC 25922*	>=10^3	inhibited	0%	--
2.	*Proteus mirabilis ATCC 25933*	50-100	good-luxuriant	>=50%	Green
3.	*Salmonella typhi ATCC 6539*	50-100	good-luxuriant	>=50%	Black with Metallic sheen
4.	*Salmonella typhimurium ATCC 14028*	50-100	good-luxuriant	>=50%	Black with Metallic sheen

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

Test Procedure

For isolation of *Salmonella typhi* and other *Salmonella* spp. consult appropriate references.

Results

1. Typical *S. typhi* surface colonies are black, surrounded by black or brown-black zone. This zone may be several times the size of the colony.
2. Other strains of Salmonella produce black to green colonies with little or no darkening of surrounding medium.
3. *Proteus mirabilis* produces green colonies.

Storage

Store the sealed bottle containing the dehydrated medium at 10 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration

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

Limitations of the Procedure

1. Prepared plates of medium should not be stored for longer than two days at 2-8°C; after which time the dye oxidises to give a green medium that can be inhibitory to some salmonellae.
2. Streak for well isolated colonies. In heavy growth areas, *S. typhi* appears light green and may be misinterpreted as negative for *S. typhi*.
3. *S. typhi* and *S. arizonae* are the only enteric organisms to exhibit typical brown zones on the medium. However, *S. arizonae* is usually inhibited. Typical *S. typhi* colonies usually develop within 24 hours; however, all plates should be incubated for a total of 48 hours to allow growth of all typhoid strains. When in doubt, almost any growth on the medium should be subject to further tests.
4. Do not autoclave medium. Heating medium for a long period may destroy selectivity properties.

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Packaging
Product Name: Wilson Blair Agar w/BG
Product Code : DM690
Available Pack sizes : 100gm / 500gm

References

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4. Mandell G. L., Douglas R. G. Jr., Bennet J. E., (Eds.) , 1985, Principles and Practice of Infectious Diseases, 2nd Ed., 660-669, John Wiley & Sons New York.
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6. Washington J. A., 1981, Laboratory Procedures in Clinical Microbiology, Springer-Verlag, New York.
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8. FDA Bacteriological Analytical Manual, 2005, 18th Ed., AOAC, Washington, D.C.
9. Murray P. R., Baron J. H., Pfaller M. A., Tenover F. C. and Yolken R. H., (Eds.). 1999, Manual of Clinical Microbiology, 7th Ed., American Society for Microbiology, Washington, D.C.
10. Downes F. P. and Ito K., (Eds.), 2001, Compendium of Methods for the Microbiological Examination of Foods, 4th Ed., APHA, Washington, D.C.
11. MacFaddin J., 1985, Media for the Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore.

Further Information

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