



# PRODUCT SPECIFICATION SHEET

## Brilliant Green Agar Medium (DM044U)

### Intended Use

Brilliant Green Agar Medium (DM044U) is recommended for selective isolation of *Salmonellae* other than *Salmonella typhi* from faeces, foods, dairy products etc. in compliance with USP.

### Product Summary and Explanation

Salmonellosis continues to be an important public health problem worldwide. Infection with non-typhi *Salmonella* often causes mild, self-limiting illness. Typhoid fever, caused by *Salmonella typhi*, is characterized by fever, headache, diarrhea, and abdominal pain, and can result in fatal respiratory, hepatic, and or neurological damage.<sup>(1)</sup> Infection can result from consumption of raw, undercooked, or improperly processed foods contaminated with *Salmonella*.

The composition of medium is as per United States Pharmacopoeia.<sup>(2)</sup> Brilliant Green, Phenol Red, Lactose Monohydrate, Sucrose Agar is used as a primary plating medium for isolation of *Salmonella* species was first described by Kristensen et al as medium for differentiation of paratyphoid B from other Gram negative enteric bacteria<sup>(3)</sup> It was further modified by Kauffmann for isolation of *Salmonella* from stool samples.<sup>(4)</sup> Brilliant green agar is also recommended by APHA<sup>(5,6)</sup> FDA.<sup>(7)</sup> The outstanding selectivity of this medium permits analysis of moderately heavy inocula and heavily contaminated samples, which should be evenly distributed over the surface. Brilliant Green Agar Medium is used in the microbial limits test.<sup>(8)</sup> Brilliant Green Agar supplemented with novobiocin is used in food testing.

### Principles of the Procedure

Brilliant Green Agar Medium contains combination of peptic digest of animal tissue, pancreatic digest of casein and yeast extract which provide carbon, nitrogen and other essential growth nutrients. Yeast extract supplies essential amino acids and long chains of peptides for enhanced growth. Sodium chloride maintains the osmotic equilibrium of the medium. Lactose and sucrose are the fermentable carbohydrate sources. Phenol red serves as an acid base indicator giving yellow colour to lactose and or sucrose fermenting bacteria. Brilliant green inhibits growth of majority of Gram-negative and Gram-positive bacteria. *Salmonella typhi*, *Shigella* species, *Escherichia coli*, *Proteus* species, *Pseudomonas* species, and *Staphylococcus aureus* are mostly inhibited.

### Formula / Liter

Ingredients	Gms / Liter
Peptic digest of animal tissue	5.00
Pancreatic digest of casein	5.00
Yeast extract	3.00
Lactose	10.00
Sucrose	10.00
Sodium chloride	5.00
Phenol red	0.08
Brilliant green	0.0125
Agar	20.00
Final pH: 6.9 ± 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. IRRITANT. Irritating to eyes, respiratory system, and skin.





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### Directions

1. Suspend 58.09 grams of medium in one liter of purified/distilled water.
2. Heat to boiling, to dissolve the medium completely.
3. Autoclave at 121°C, 15 psi pressure, for 15 minutes / validated cycle.
4. AVOID OVER HEATING. Cool to 50°C
5. Mix well before pouring into sterile Petri plates.

### Quality Control Specifications

<b>Dehydrated Appearance</b>	Light yellow to light pink homogeneous free flowing powder
<b>Prepared Medium</b>	Greenish brown coloured clear to slightly opalescent gel forms in Petri plates
<b>Reaction of % Solution</b>	Not Applicable
<b>Gel Strength</b>	Firm, comparable with 2.0% agar gel.

### Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 24-48 hours. Recovery rate is considered as 100% for bacteria growth on Soyabean Casein Digest Agar.

### Expected Cultural Response:

Sr. No.	Organisms	Results to be achieved					Incubation Period
		Inoculum (CFU)	Growth	Lot value (CFU)	Recovery	Colour of Colony	
	<b><i>Growth Promotion Test</i></b>						
1.	<i>Salmonella typhimurium</i> ATCC 14028	50-100	good-luxuriant	25-100	≥50 %	pinkish white	24 -48 hrs
2.	<i>Salmonella abony</i> NCTC 6017	50-100	good-luxuriant	25-100	≥50 %	pinkish white	24 -48 hrs
	<b><i>Additional Microbiological testing</i></b>						24 -48 hrs
3.	<i>Salmonella enteritidis</i> ATCC 13076	50-100	good-luxuriant	25-100	≥50 %	pinkish white	24 -48 hrs
4.	<i>Salmonella typhi</i> ATCC 6539	50-100	fair-good	15-40	30-40 %	reddish pink	24 -48 hrs
5.	<i>Escherichia coli</i> ATCC 8739	50-100	none to poor	0-10	0-10 %	yellowish green	24 -48 hrs
6.	<i>Escherichia coli</i> ATCC 25922	50-100	none to poor	0-10	0-10 %	yellowish green	24 -48 hrs
7.	<i>Staphylococcus aureus</i> ATCC 6538	≥10 <sup>3</sup>	inhibited	0	0%	--	24 -48 hrs
8.	<i>Staphylococcus aureus</i> ATCC 25923	≥10 <sup>3</sup>	inhibited	0	0%	--	24 -48 hrs

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





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### Test Procedure

1. Clinical specimens can be directly plated on this medium. Use standard procedures to obtain isolated colonies from specimens.
2. However, being highly selective, it is recommended that this medium should be used along with a less inhibitory medium to increase the chances of recovery.
3. Often cultures enriched in Selenite or Tetrathionate Broth are plated on Brilliant Green Agar along with Bismuth Sulphite Agar, SS Agar, MacConkey Agar.
4. Incubate plates, protected from light, at 30-35°C for 18-24 hours. If negative after 24 hours, reincubate an additional 24 hours.

### Results

1. Non-lactose fermenting bacteria develop white to pinkish red colonies within 18-24 hours of incubation.
2. *Salmonella typhi* and *Shigella* species may not grow on this medium, moreover *Proteus*, *Pseudomonas* and *Citrobacter* species may mimic enteric pathogens by producing small red colonies.
3. Lactose and/or sucrose fermenters produce yellowish 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. For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification.
2. Consult appropriate texts for detailed information and recommended procedures.

### Packaging

**Product Name : Brilliant Green Agar Medium**

**Product Code : DM044U**

**Available Pack sizes : 100gm/500gm**

### References

1. P. R. Murray, E. J. Baron, M. A. Pfaller, F. C. Tenover, and R. H. Tenover (eds.). Manual of clinical microbiology, 6<sup>th</sup> ed. American Society for Microbiology, Washington, D. C.
2. The United States Pharmacopoeia, 2009. USP Conv. Rockville, MD.
3. Kristensen M., Lester V, and Jurgens A., 1925, Brit.J.Exp.Pathol., 6:291.
4. Kauffman F., 1935, Seit F. Hyg. 177:26.
5. Downes F P and Ito K(Eds.), 2001, Compendium of Methods For The Microbiological Examination of Foods, 4th ed., APHA, Washington, D.C.
6. Wehr H M and Frank J H., 2004, Standard Methods for the Examination of Dairy Products, 17th ed., APHA Inc., Washington, D.C.
7. FDA Bacteriological Analytical Manual, 2005, 18th ed., AOAC, Washington, DC.
8. United States Pharmacopoeial Convention. 1995. The United States pharmacopoeia, 23th ed. The United States Pharmacopoeial Convention, Rockville. MD.





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### Further Information

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