

Bacto™ Tryptose

Intended Use

Bacto Tryptose is an enzymatic digest of protein used in preparing microbiological culture media.

Summary and Explanation

Tryptose was originally developed as a peptone particularly adapted to growth requirements of *Brucella*. Tryptose is very useful for cultivation of streptococci, pneumococci, meningococci and other fastidious organisms, and was found to be superior to meat infusion peptone media previously used for these organisms.^{1,2} Mobley et al.³ reported that Tryptose Broth was the preferred medium for strains of *Bordetella bronchiseptica* in studies of phosphatase activity.

Tryptose has been reported as beneficial for cell culture applications. Litwin⁴ found Tryptose to be suitable for supplementing a serum-free medium to grow human diploid fibroblasts. Vaughn and Fan⁵ established that Tryptose provided free amino acids necessary for growth of *Spodoptera frugiperda* and *Lymantria dispar* insect cell lines. Tryptose is often used as a biomass enhancer for recombinant *E. coli* production.

Tryptose is the major ingredient and only peptone in the formulation for Tryptose Phosphate Broth (TPB), an often-used medium for various culture applications. Hata and Kojima⁶ have shown TPB to be a useful supplement in culturing the nematode, *Angiostrongylus cantonensis*. TPB was also reported as a supplement to a medium for cultivating a protozoan parasite, which parasitizes vectors of Chagas' disease, on its insect cell host.⁷ *Spodoptera frugiperda*, a cotton pest in Argentina⁸ and several tick cell lines have also been grown using a TPB-supplemented medium.⁹ Tryptose Phosphate Broth has been reported as a suitable supplement for growth of baby hamster kidney cells¹⁰ and porcine kidney cells.¹¹

Media formulations containing **Bacto** Tryptose are specified in standard methods for various applications.¹²⁻¹⁷

Principles of the Procedure

Bacto Tryptose is a mixed enzymatic hydrolysate with distinctive nutritional properties. The digestive process of **Bacto** Tryptose results in assorted peptides of higher molecular weight suitable for long chain amino acid requirements. **Bacto** Tryptose

User Quality Control

Identity Specifications

Bacto™ Tryptose

Dehydrated Appearance: Tan, free-flowing, granules.

Solution: 1.0%, 2.0% and 10.0% solutions, soluble in purified water. 1.0% solution is light amber, clear. 2.0% solution is medium amber, clear to slightly opalescent. 10.0% solution is medium to dark amber, very slightly opalescent to opalescent, may have a precipitate.

Reaction of 1.0% Solution at 25°C: pH 7.1-7.5

Cultural Response

Biochemical Reactions

Bacto™ Tryptose

Prepare a sterile solution of **Bacto** Tryptose as directed below. Adjust final pH to 7.2-7.4. Inoculate and incubate at 35 ± 2°C for 18-48 hours.

TEST	TEST SOLUTION	ORGANISM	ATCC™	INOCULUM CFU	RESULT
Fermentable Carbohydrates	2%	<i>Escherichia coli</i>	25922	~10 ⁷	Negative
Indole Production	0.1%	<i>Escherichia coli</i>	29552	0.1 mL, undiluted	Positive
Acetylmethylcarbinol Production	0.1% with 0.5% dextrose	<i>Enterobacter aerogenes</i>	13048	0.1 mL, undiluted	Positive
Hydrogen Sulfide Production	1%	<i>Salmonella choleraesuis</i> subsp. <i>choleraesuis</i> serotype Typhimurium	14028	0.1 mL, undiluted	Positive

Growth Response

Bacto™ Tryptose

Prepare a sterile solution with 2% **Bacto** Tryptose, 0.5% sodium chloride and 1.5% agar. Adjust final pH to 7.2-7.4. Inoculate and incubate plates at 35 ± 2°C for 18-48 hours.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY
<i>Brucella suis</i>	4314*	Undiluted	Good
<i>Staphylococcus aureus</i>	25923	30-300	Good
<i>Streptococcus pneumoniae</i>	6303	30-300	Good
<i>Streptococcus pyogenes</i>	19615	30-300	Good

*If this strain is not available, verify performance with a known isolate.

provides nitrogen, amino acids and vitamins in microbiological culture media.

Typical Analysis

Refer to Product Tables in the Reference Guide section of this manual.

Precautions¹⁸

1. Biosafety Level 2 practices, containment equipment and facilities are recommended for activities with clinical specimens of human or animal origin containing or potentially containing pathogenic *Brucella* spp.
2. Biosafety Level 3 practices, containment equipment and facilities are recommended for all manipulations of cultures of the pathogenic *Brucella* spp. and for experimental animal studies.

Directions for Preparation from Dehydrated Product

Refer to the final concentration of Bacto Tryptose in the formula of the medium being prepared. Add product as required.

Procedure

See appropriate references for specific procedures using Bacto Tryptose.

Expected Results

Refer to appropriate references and procedures for results.

References

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7. Reduth, Schaub, and Pudney. 1989. Parasitology 98:387.
8. Deutschmann and Jager. 1994. Enzyme Microb. Technol. 16:506.
9. Munderloh and Kurtti. 1989. Exp. Appl. Acarol. 7:219.
10. Profafikas and Plavsic. 2000. Focus 22:35.
11. Sakoda and Fukusho. 1998. In Vitro Cell Dev. Biol. Anim. 34:53.
12. Horowitz (ed.). 2000. Official methods of analysis of AOAC International, 17th ed. AOAC International, Gaithersburg, Md.
13. U.S. Food and Drug Administration. 1995. Bacteriological analytical manual 8th ed. AOAC International, Gaithersburg, Md.
14. Downes and Ito (ed.). 2001. Compendium of methods for the microbiological examination of foods, 4th ed. American Public Health Association, Washington, D.C.
15. U.S. Environmental Protection Agency (USEPA). 2000. Improved enumeration methods for the recreational water quality indicators: Enterococci and *Escherichia coli*. EPA-821/R-97/004. Office of Water, USEPA, Washington, D.C.
16. Clesceri, Greenberg and Eaton (ed.). 1998. Standard methods for the examination of water and wastewater, 20th ed. American Public Health Association, Washington, D.C.
17. U.S. Department of Agriculture. 1998. Microbiology laboratory guidebook, 3rd ed. Food and Safety Inspection Service, USDA, Washington, D.C.
18. U.S. Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health. 1999. Biosafety in microbiological and biomedical laboratories, 4th ed. HHS Publication No. (CDC) 93-8395. U.S. Government Printing Office, Washington, D.C.

Availability

Bacto™ Tryptose

	AOAC	BAM	COMPF	EPA	SMWW	USDA
Cat. No.	211713					
						Dehydrated – 500 g
						211709 Dehydrated – 10 kg

Tryptose Blood Agar Base

Intended Use

Tryptose Blood Agar Base is used with blood in isolating, cultivating and determining the hemolytic reactions of fastidious microorganisms.

Summary and Explanation

Investigations of the nutritive properties of tryptose demonstrated that culture media prepared with this peptone were superior to the meat infusion peptone media previously used for the cultivation of *Brucella*, streptococci, pneumococci, meningococci and other fastidious bacteria. Casman^{1,2} reported that a medium consisting of 2% tryptose, 0.3% beef extract, 0.5% NaCl, 1.5% agar and 0.03% dextrose equaled fresh beef infusion base with respect to growth of organisms. The small amount of carbohydrate was noted to interfere with hemolytic reactions, unless the medium was incubated in an atmosphere of carbon dioxide.

Tryptose Blood Agar Base is a nutritious infusion-free basal medium typically supplemented with 5-10% sheep, rabbit or horse blood for use in isolating, cultivating and determining hemolytic reactions of fastidious pathogenic microorganisms.

Without enrichment, this base can be used as a general-purpose medium. Tryptose Blood Agar Base is included in the FDA *Bacteriological Analytical Manual* (pH adjusted to 6.8 ± 0.2).³

Principles of the Procedure

Tryptose is the source of nitrogen, carbon and amino acids in Tryptose Blood Agar Base. Beef extract provides additional nitrogen. Sodium chloride maintains osmotic balance. Agar is the solidifying agent.

Supplementation with 5-10% blood provides additional growth factors for fastidious microorganisms and is used to determine hemolytic patterns of bacteria.

Formula

Difco™ Tryptose Blood Agar Base

Approximate Formula* Per Liter		
Tryptose	10.0	g
Beef Extract	3.0	g
Sodium Chloride	5.0	g
Agar	15.0	g

*Adjusted and/or supplemented as required to meet performance criteria.

