Bacto™ Casitone • Trypticase™ Peptone
Bacto™ Tryptone • BiTek™ Tryptone

Intended Use

Bacto Casitone, Trypticase Peptone, Bacto Tryptone and BiTek Tryptone are used in preparing microbiological culture media.

Ingredients, where noted, meet *United States Pharmacopeia (USP) performance specifications.*

Summary and Explanation

The manufacturing process for an enzymatic digest of casein is not as destructive as an acid hydrolysis. Thus, the casein is not broken down as completely into its constituent components. In many cases this makes for a more nutritious hydrolysate, especially for those organisms that prefer peptides to amino acids.

Bacto Casitone can be used as a component in microbiological culture media or in fermentation applications. A recent publication has also reported that the stability of lyophilized influenza virus vaccine was augmented by the addition of 2% Casitone.[1]

Trypticase Peptone is the primary nitrogen source in Trypticase Soy Broth and Agar. This product is recommended for use in media formulations, where good growth of fungi and bacteria is required. Trypticase Peptone is referenced in *Official Methods of Analysis of AOAC International* and meets specifications in the *USP* for pancreatic digest of casein.[2,3]

Bacto Tryptone was developed by Difco Laboratories while investigating a peptone particularly suitable for the elaboration of indole by bacteria. It is also notable for the absence of detectable levels of carbohydrates. Bacto Tryptone has been used in conjunction with casamino acids in nutritional studies to determine amino acids vs. peptide utilization.[4,5] It is included in standard methods applications and is listed in the reagent section of the *USP* as meeting the specifications for pancreatic digest of casein, a component in many of the media listed.[3,5,6,10] The *European Pharmacopoeia* also lists pancreatic digest of casein as a component in many of the recommended media.[12] Bacto Tryptone also works well in fermentation applications. It has been used successfully with commonly used organisms, such as *Escherichia coli*,[13] as well as uncommon organisms, such as the diatom *Nitzschia laevis*.[14]

BiTek Tryptone is prepared similarly to Bacto Tryptone but the final product goes through fewer refinement steps during processing. This product provides some of the same benefits as Bacto Tryptone in instances where a less refined hydrolysate can be utilized.

Principles of the Procedure

Bacto Casitone, Trypticase Peptone, Bacto Tryptone and BiTek Tryptone are pancreatic digests of casein. Casein is the main milk protein and a rich source of amino acid nitrogen.

Typical Analysis

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

User Quality Control

NOTE: Differences in the Identity Specifications and Cultural Response testing for media offered as both **Difco**™ and **BBL**™ brands may reflect differences in the development and testing of media for industrial and clinical applications, per the referenced publications.

Identity Specifications

Bacto™ Casitone

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 light to medium amber, clear, may have a slight precipitate. 10.0% solution is medium to dark amber, clear to very slightly opalescent, may have a precipitate.
Reaction of 1.0% Solution at 25°C:	pH 6.8-7.4

Bacto™ Tryptone

Dehydrated Appearance:	Light beige, free-flowing, homogeneous.
Solution:	1.0%, 2.0% and 10.0% solutions, soluble in purified water. 1.0% solution is very light to light amber, clear. 2.0% solution is light to medium amber, clear. 10.0% solution is medium to dark amber, clear to slightly opalescent,may have a slight precipitate.
Reaction of 2.0% Solution at 25°C:	pH 6.5-7.5

BiTek™ Tryptone

Dehydrated Appearance:	Light beige, free-flowing, homogeneous.
Solution:	1.0%, 2.0% and 10.0% solutions, soluble in purified water. 1.0% solution is very light to light amber, clear. 2.0% solution is light to medium amber, clear. 10.0% solution is medium to dark amber, clear to slightly opalescent, may have a slight precipitate.
Reaction of 2.0% Solution at 25°C:	pH 7.2 ± 0.2

BBL™ Trypticase™ Peptone

Dehydrated Appearance:	Fine, homogeneous, free of extraneous material.
Solution:	2.0% solution, soluble in purified water. Solution is clear to slightly hazy.
Reaction of 2.0% Solution at 25°C:	pH 6.5-7.5

Continued

Cultural Response
Biochemical Reactions

Bacto™ Casitone, Bacto™ Tryptone or BiTek™ Tryptone

Prepare a sterile solution 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%	*Escherichia coli*	25922	~10^7	Negative
Indole Production	0.1%	*Escherichia coli*	29552	0.1 mL, undiluted	Positive
Acetylmethylcarbinol Production	0.1% with 0.5% dextrose	*Enterobacter aerogenes*	13048	0.1 mL, undiluted	Positive
Hydrogen Sulfide Production	1%	*Salmonella enterica* subsp. *enterica* serotype Typhimurium	14028	0.1 mL, undiluted	Positive

BBL™ Trypticase™ Peptone

Prepare a sterile solution 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%	*Escherichia coli*	29552	~10^7	Negative
Indole Production	0.1%	*Escherichia coli*	29552	0.1 mL, undiluted	Positive
Acetylmethylcarbinol Production	0.1% with 0.5% dextrose	*Enterobacter aerogenes*	13048	0.1 mL, undiluted	Positive
Hydrogen Sulfide Production	1%	*Citrobacter freundii*	8454	0.1 mL, undiluted	Positive

Growth Response

Bacto™ Casitone, Bacto™ Tryptone or BiTek™ Tryptone

Prepare a sterile solution with 2.0% **Bacto** Casitone, **Bacto** Tryptone or **BiTek** Tryptone, 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
Escherichia coli	25922	30-300	Good
Staphylococcus aureus	25923	30-300	Good

BBL™ Trypticase™ Peptone

1. Prepare a sterile solution of peptone agar without (plain) and with 5% sheep blood (SB) using 10 g Trypticase Peptone, 2.5 g sodium chloride and 6.5 g agar in 500 mL of purified water. Adjust final pH to 7.2-7.4. Inoculate and incubate plates at 35 ± 2°C for 3 days (incubate streptococci with CO_2).

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY PLAIN	RECOVERY WITH SB
Enterobacter aerogenes	13048	10^1-10^3	Good	N/A
Escherichia coli	25922	10^1-10^3	Good	N/A
Staphylococcus aureus	6538P	10^1-10^3	Good	N/A
Staphylococcus epidermidis	12228	10^1-10^3	Good	N/A
Streptococcus agalactiae	12386	10^1-10^3	N/A	Good, beta hemolysis
Streptococcus pneumoniae	6305	10^1-10^3	N/A	Good, alpha hemolysis
Streptococcus pyogenes	49117	10^1-10^3	Good	Good, beta hemolysis

2. Prepare a sterile solution of chocolate peptone agar using **Trypticase** Peptone. Adjust final pH to 7.2-7.4. Inoculate and incubate plates at 35 ± 2°C for 3 days with CO_2.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY
Neisseria gonorrhoeae	19424	10^1-10^4	Good

Directions for Preparation from Dehydrated Product

Refer to the final concentration of Bacto Casitone, Trypticase Peptone, Bacto Tryptone and BiTek Tryptone in the formula of the medium being prepared. Add appropriate product as required.

Procedure

See appropriate references for specific procedures using Bacto Casitone, Trypticase Peptone, Bacto Tryptone and BiTek Tryptone.

Expected Results

Refer to appropriate references and procedures for results.

References

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5. Nagel, Oostra, Tramper and Rinzema. 1999. Process Biochem. 35:49.
6. Downes and Ito (ed.). 2001. Compendium of methods for the microbiological examination of foods, 4th ed. American Public Health Association, Washington, D.C.
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9. Wehr and Frank (ed.). 2004. Standard methods for the examination of dairy products, 17th ed. American Public Health Association, Washington D.C.
10. U.S. Environmental Protection Agency. 2000. Improved enumeration methods for the recreational water quality indicators: Enterococci and *Escherichia coli*. EPA-821/R-97/004. Office of Water, Washington, D.C.
11. U.S. Department of Agriculture. 1998. Microbiology laboratory guidebook, 3rd ed. Food Safety and Inspection Service, USDA, Washington, D.C.
12. Council of Europe. 2008. European pharmacopoeia, 6th ed. Council of Europe, Strasbourg, France.
13. Strohmaier, Chen, Hackett, Hoang, Lam, Lois, Siu, Wong and Wong. 1999. Process Biochem. 34:893.
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Availability

Bacto™ Casitone

COMPH GMO EMNVW USDA

Cat. No.	225930	Dehydrated – 500 g
	225910	Dehydrated – 10 kg

BBL™ Trypticase™ Peptone

AOAC BAM COMPF EP EPA GMO MNVW USDA USP

Cat. No.	211921	Dehydrated – 454 g
	211922	Dehydrated – 5 lb (2.3 kg)
	211923	Dehydrated – 25 lb (11.3 kg)

Bacto™ Tryptone

AOAC BAM COMPF EP EPA GMO MNVW USDA USP

Cat. No.	211705	Dehydrated – 500 g
	211699	Dehydrated – 2 kg
	211701	Dehydrated – 10 kg

BiTek™ Tryptone

Cat. No.	251420	Dehydrated – 10 kg