

# Bacto™ Peptone

## Intended Use

Bacto Peptone is used as an organic nitrogen source in microbiological culture media for cultivation of a variety of bacteria and fungi.

## Summary and Explanation

Bacto Peptone was first introduced in 1914 and became the standard peptone for the preparation of bacteriological culture media. Bacto Peptone is used as an organic nitrogen source in microbiological culture media for cultivation of a variety of bacteria and fungi. For example, Iwanaga et al.<sup>1</sup> utilized Bacto Peptone for production of cholera toxin by *Vibrio cholerae* O1 El Tor. Benkerroum et al.<sup>2</sup> reported using Bacto Peptone in a selective medium developed for isolating *Leuconostoc* sp. from food samples. Bacto Peptone was used in a culture medium for two anaerobic, extremely thermophilic Archaea, *Thermococcus celer* and *Pyrococcus woesei*, by Blamey et al.<sup>3</sup>

Bacto Peptone has also been utilized as a nitrogen source in cell culture media formulations. Taylor et al.<sup>4</sup> used Bacto Peptone to supplement serum-free medium for several mammalian cell lines and reported that the solubility of Bacto Peptone is very good at 10 g/100 mL water. Sakoda and Fukusho<sup>5</sup> also utilized Bacto Peptone in serum-free culture medium for maintaining porcine kidney epithelial cells. Bacto Peptone is also useful as a supplement in cell culture with serum.

Researchers uncovered estrogenic activity associated with Bacto Peptone when including the peptone in medium for culture of yeast. The estrone contained in Bacto Peptone was converted to estradiol by *Saccharomyces cerevisiae*. These findings suggest that adding estrogens to a medium containing Bacto Peptone for studies of estradiol production by yeast may confound results.<sup>6,7</sup>

Several media containing peptone are specified in standard methods for multiple applications.<sup>8-15</sup>

## Principles of the Procedure

Bacto Peptone is an enzymatic digest of animal protein. Bacto Peptone contains nitrogen in a form that is readily available for bacterial growth. Bacto Peptone has a high peptone and amino acid content, with only a negligible quantity of proteoses and more complex nitrogenous constituents.

## Typical Analysis

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

## Directions for Preparation from Dehydrated Product

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

## User Quality Control

### Identity Specifications

#### Bacto™ Peptone

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. 10.0% solution is medium to dark amber, clear to very slightly opalescent, may have a very slight precipitate.

Reaction of 1.0% Solution at 25°C: pH 6.8-7.2

### Cultural Response

#### Biochemical Reactions

#### Bacto™ Peptone

Prepare a sterile solution of Bacto Peptone 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 <sup>7</sup>	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 enterica</i> subsp. <i>enterica</i> serotype Typhimurium	14028	0.1 mL, undiluted	Positive

### Growth Response

#### Bacto™ Peptone

Prepare a sterile solution with 2% Bacto Peptone, 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>Escherichia coli</i>	25922	30-300	Good
<i>Staphylococcus aureus</i>	25923	30-300	Good

## Procedure

See appropriate references for specific procedures using Bacto Peptone.

## Expected Results

Refer to appropriate references and procedures for results.

## References

1. Iwanaga, Yamamoto, Higa, Ichinose, Nakasone and Tanabe. 1986. *Microbiol. Immunol.* 30:1075.
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3. Blamey, Chiong, Lopez and Smith. 1999. *J. Microbiol. Methods.* 38:169.
4. Taylor, Dworkin, Pumper and Evans. 1972. *Exp. Cell Res.* 74:275.
5. Sakoda and Fukusho. 1998. *In Vitro Cell. Dev. Biol. Anim.* 34:53.
6. Feldman and Krishnan. 1995. *Environ. Health Perspect.* 103 Suppl 7:129.
7. Miller, Bottema, Stathis, Tokes and Feldman. 1986. *Endocrinology.* 119:1362.
8. Downes and Ito (ed.), 2001. *Compendium of methods for the microbiological examination of foods*, 4th ed. American Public Health Association, Washington, D.C.
9. Horowitz (ed.). 2007. *Official methods of analysis of AOAC International*, 18th ed., online. AOAC International, Gaithersburg, Md.
10. Eaton, Rice and Baird (ed.). 2005. *Standard methods for the examination of water and wastewater*, 21st ed., online. American Public Health Association, Washington, D.C.
11. Wehr and Frank (ed.). 2004. *Standard methods for the examination of dairy products*, 17th ed. American Public Health Association, Washington, D.C.
12. 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.
13. U.S. Food and Drug Administration. 2001. *Bacteriological analytical manual*, online. AOAC International, Gaithersburg, Md.
14. United States Pharmacopeial Convention, Inc. 2008. *The United States pharmacopeia 31/The national formulary 26, Supp. 1*, 8-1-08, online. United States Pharmacopeial Convention, Inc., Rockville, Md.
15. U.S. Department of Agriculture. *Microbiology laboratory guidebook*, online. Food Safety and Inspection Service, USDA, Washington, D.C.

## Availability

### Bacto™ Peptone

<b>AOAC</b>	<b>BAM</b>	<b>COMPF</b>	<b>EP</b>	<b>EPA</b>	<b>SMD</b>	<b>SMWW</b>	<b>USDA</b>	<b>USP</b>
Cat. No.	211677	Dehydrated – 500 g						
	211820	Dehydrated – 2 kg						
	211830	Dehydrated – 10 kg						