

**CIL**

Cambridge Isotope Laboratories, Inc.

[www.isotope.com](http://www.isotope.com)

RESEARCH PRODUCTS

# Celtone<sup>®</sup> Base Powder and Celtone<sup>®</sup> Complete Growth Medium

(*E. coli* and Other Bacteria)

For the expression of uniformly stable  
isotope-labeled proteins

## Celtone<sup>®</sup> Base Powder

CIL's most flexible media, Celtone<sup>®</sup> Base Powder is a mixture of amino acids, peptides, vitamins and other essential nutrients, which provide a "rich" environment for excellent bacterial cell growth and high protein expression.

The advantage of Celtone<sup>®</sup> powder is that researchers can formulate a custom medium based on their specific research needs. Depending on cell line and desired performance, this powdered media can be used at concentrations ranging from 1 g to 10 g per liter. Truly exceptional performance has been achieved with M9 salts, 2-3 g/L glucose and 1 g of ammonium chloride. The powder is easy to use and store and has the longest shelf life of any fully rich bacterial growth medium.

Celtone<sup>®</sup> Base Powder alone does not constitute a complete medium. Appropriately labeled salts and carbohydrates are needed to make a complete medium. Each lot is tested for cell growth and protein expression. Available in 0.5 g and 1 g sizes.

Catalog No.	Labeling
CGM-1030P-C	( <sup>13</sup> C, 98%)
CGM-1030P-D	(D, 97%)
CGM-1030P-N	( <sup>15</sup> N, 98%)
CGM-1030P-CD	( <sup>13</sup> C, 98%; D, 97%)
CGM-1030P-CN	( <sup>13</sup> C, 98%; <sup>15</sup> N, 98%)
CGM-1030P-CDN	( <sup>13</sup> C, 98%; D, 97%; <sup>15</sup> N, 98%)
CGM-1030P-DN	(D, 97%; <sup>15</sup> N, 98%)
CGM-1030P-U	Unlabeled

## Celtone<sup>®</sup> Complete Medium

Celtone<sup>®</sup> Complete Medium is a "rich" bacterial cell growth medium derived from an algal source with a growth rate comparable to LB, allowing for inoculation and induction within one working day. Celtone<sup>®</sup> contains amino acids, nucleic acids, peptides, vitamins, salts and other essential nutrients and provides excellent cell growth and high protein expression.

Celtone<sup>®</sup> Complete Medium is formulated as ready-to-use medium without need for dilution or pH adjustment. Each lot is tested for sterility, cell growth and protein expression. Available in 0.1 L and 1 L sizes.

Catalog No.	Labeling
CGM-1040-C	( <sup>13</sup> C, 98%)
CGM-1040-D	(D, 97%)
CGM-1040-N	( <sup>15</sup> N, 98%)
CGM-1040-CN	( <sup>13</sup> C, 98%; <sup>15</sup> N, 98%)
CGM-1040-CDN	( <sup>13</sup> C, 98%; D, 97%; <sup>15</sup> N, 98%)
CGM-1040-DN	(D, 97%; <sup>15</sup> N, 98%)
CGM-1040-U	Unlabeled

## Spectra 9

Spectra 9 is a cost-effective medium for *E. coli* bacterial growth and protein expression. It is comprised of labeled salts and labeled carbohydrates, and is supplemented with Celtone® Base Powder (1 g powder per liter Spectra 9) which contains amino acids, vitamins, peptides and other essential nutrients.

Spectra 9 is available as a ready-to-use solution and should not be diluted. Each lot is tested for sterility, cell growth and protein expression. Available in 0.5 L and 1 L sizes.

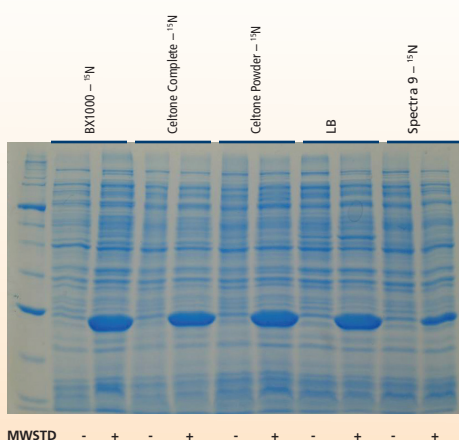
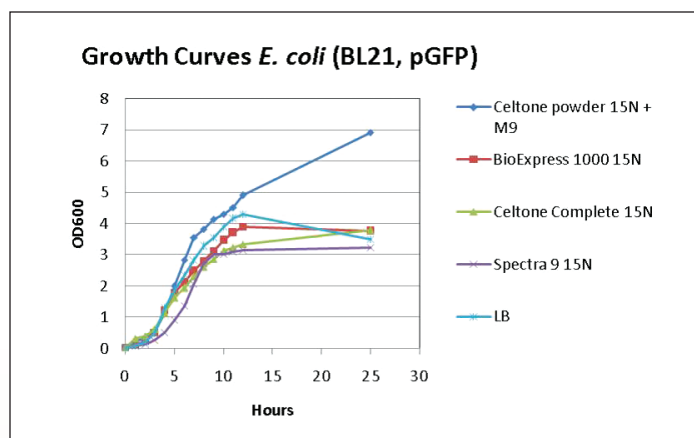
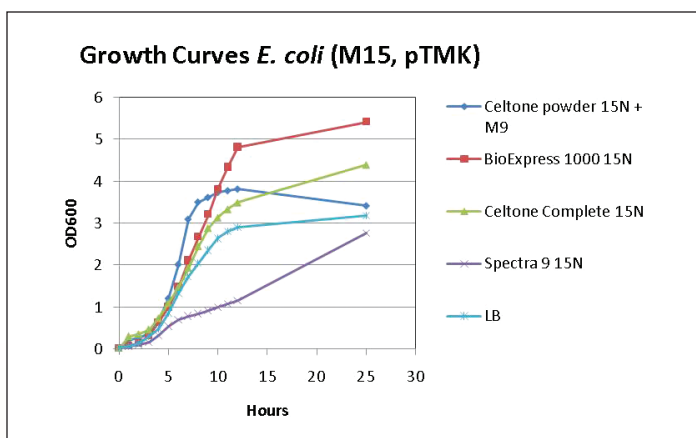
### Catalog No.

CGM-3030-C	( <sup>13</sup> C, 98%)
CGM-3030-D	(D, 97%)
CGM-3030-N	( <sup>15</sup> N, 98%)
CGM-3030-CN	( <sup>13</sup> C, 98%; <sup>15</sup> N, 98%)
CGM-3030-CDN	( <sup>13</sup> C, 98%; D, 97%; <sup>15</sup> N, 98%)
CGM-3030-DN	(D, 97%; <sup>15</sup> N, 98%)
CGM-3030-U	Unlabeled

### Labeling

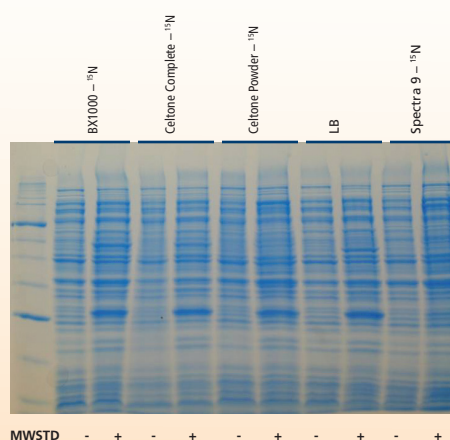
## Cell Growth and Protein Expression

CIL conducted a cell growth and protein expression study comparing two different *E. coli* strains, (M15, pTMK) and (BL21, pGFP), in four different <sup>15</sup>N-labeled growth media and one control medium, luria broth (LB). The below results show the superior performance of CIL's media over LB.



Gel showing expression of thymidylate kinase (TMK) from *E. coli* M15 grown on four different CIL <sup>15</sup>N-labeled bacterial cell growth medias and LB. The T5 promoter, which expresses TMK, is a bacteriophage promoter similar to the T7 promoter which is the most common promoter used for recombinant protein expression in *E. coli*.

**-: pre-induction;**  
**+: post-induction**



Gel showing expression of GFP from *E. coli* BL21 grown on four different CIL <sup>15</sup>N-labeled bacterial cell growth medias and LB. Reduced expression in Celtone powder + M9 and extremely poor (or no) expression in Spectra 9 is due to the high levels of glucose (approximately 2 g/L) present in these media; the Arabinose promoter (pAraBAD) present on the expression vector in this strain is sensitive to glucose levels.

**-: pre-induction;**  
**+: post-induction**

