

TABLE 1. Composition of Luria-Bertani broth

Metabolite(s)	Allele conferring auxotrophy ^a	Concn (mM) determined by:	
		<i>E. coli</i> ^b	HPLC ^c
L-Alanine		ND ^d	5.8
L-Arginine	<i>argA::Tn10</i>	2.0	2.8
L-Asparagine	<i>asnA31 asnB50::Tn5</i>	≤2.1 ^e	
L-Aspartate		ND ^d	
L-Asp + L-Asn			7.3
L-Cysteine	<i>cysG</i>	1.7	0.4
L-Glutamic acid	$\Delta(\textit{gltA-sucB})::\textit{Spc}^f$	11.2	
L-Glutamine	<i>glnA1857</i>	0.6	
L-Glu + L-Gln			19.1
Glycine	<i>glyA42::Tn5</i>	18	4.0
L-Histidine	<i>hisG213::Tn10</i>	0.75	1.4
L-Isoleucine	<i>ilvA454</i>	2.3	5.4
L-Leucine	<i>leu-82::Tn10</i>	7.9	8.8
L-Lysine	<i>lysA::Tn10</i>	3.8	6.8
L-Methionine	<i>metA</i>	2.0	5.9
L-Phenylalanine	<i>pheA18::Tn10</i>	2.4	3.6
L-Proline	<i>proC46::Tn5</i>	1.4	9.5
L-Serine	<i>serB22</i>	7.5	5.1
L-Threonine	<i>thrA34::Tn10</i>	5.2	4.4
L-Tryptophan	<i>trp::Tn5</i>	≤1.1 ^f	ND ^g
L-Tyrosine	<i>tyrA16::Tn10</i>	1.0	1.4
L-Valine	<i>ilvD691::Tn10</i>	≤9.5 ^h	7.0
Purines	<i>purK79::Tn10</i>	0.3	ND
Pyrimidines	<i>purC46</i>	0.2	ND
Sugars	<i>hemA::kan</i>	<0.1 ⁱ	ND

^a All alleles were introduced into the MG1655 background by P1vir transduction.

^b Bioassays were carried out essentially as described in the legend to Fig. 3, by using appropriate mutants of MG1655 and measuring the growth yield (final OD₆₀₀) as a function of the concentration of the required nutrient (calibration curve) and of Luria-Bertani broth (bioassay).

^c The hydrolysis and HPLC analysis of the amino acids in Luria-Bertani broth were carried out by the Service de Chimie Organique of the Institut Pasteur, Paris, France.

^d ND, not determined. We did not have auxotrophs for L-alanine or L-aspartate.

^e Little or no growth was observed at L-asparagine concentrations below 50 μM (which gave a final OD₆₀₀ of 1.2), possibly because of poor transport.

^f Tryptophan is unstable and tends to disappear from the medium, especially if the latter is not protected from light.

^g Tryptophan is destroyed by acid hydrolysis.

^h The medium contained an excess of L-isoleucine, which the strain also requires. This also obviates the strain's sensitivity to L-valine. The growth response to exogenous L-valine was greater than linear. The values shown were calculated from the minimal concentration allowing saturation.

ⁱ Calculated from the response to D-glucose (see text).