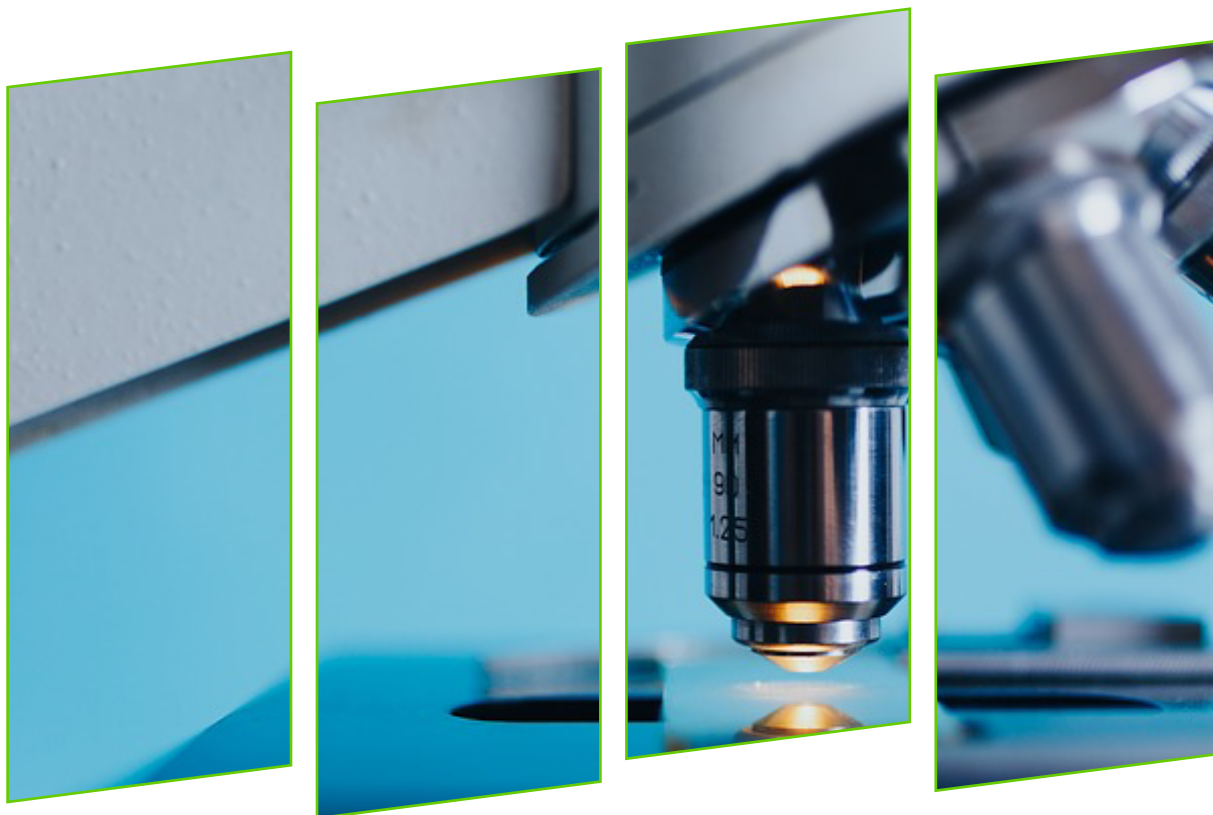




GB 4789.38-2012

**National Food Safety Standard
Food Microbiological Examination: Enumeration of
Escherichia Coli**

食品安全国家标准

食品微生物学检验 大肠埃希氏菌计数

Ministry of Health of the People's
Republic of China

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National Standard of the People's Republic of China

GB 4789.38-2012

In Replacement of GB/T 4789.38-2008

National Food Safety Standard

Food Microbiological Examination: Enumeration of *Escherichia Coli*

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ChemLinked Team, REACH24H Consulting Group | <http://food.chemlinked.com>

14F, #3 Bldg., Haichuang Technology Center, No. 1288 Wenyi West Road, Hangzhou, China. PC: 311121

Tel: +86 571 8609 4444 | Fax: +86 571 8700 7566 | Email: contact@chemlinked.com

Foreword

This standard replaces GB/T 4789.38-2008 “Microbiological Examination of Food Hygiene – Enumeration of *Escherichia Coli*”.

Compared with GB 4789.38-2008, major changes of this standard are as follows:

- the Chinese name of the standard has been revised;
- “Culture mediums and reagents” has been revised;
- “Method II VRB-MUG Plate count method for enumeration of *Escherichia coli*” has been revised to “Plate count method for enumeration of *Escherichia coli* (Method II)”
- “Method III Petrifilm TM test strip count method for enumeration of *Escherichia coli*” has been deleted;
- Annex A has been revised.

National Food Safety Standard

Food Microbiological Examination: Enumeration of *Escherichia Coli*

1 Scope

This standard specifies the method for enumeration of *Escherichia coli* in foods.

This standard applies to the enumeration of *Escherichia coli* in foods; while, plate count method for enumeration of *Escherichia coli* (Method II) does not apply to shellfish products.

2 Terms and Definitions

2.1 *Escherichia coli*

Escherichia coli refers to a gram-negative bacillus that shows result in IMViC (Kovacs, methyl red, VP test and citrate) biochemical test to be ++-- or -+--, which widely exists in intestines of humans and warm-blooded animals, and can produce gas and acid by fermenting lactose at 44.5 °C. It is used as fecal pollution indicator for assessment of food hygiene situations and inference of possibility of pathogenic bacteria pollution in intestine caused by foods.

2.2 Most probable number

It refers to an indirect counting method based on Poisson distribution, which is short for MPN.

3 Apparatus and Materials

In addition to the conventional apparatus for sterilization and incubation in microbiological laboratory, other apparatus and materials are as follows:

- a) Constant temperature incubator: 36 °C±1 °C;
- b) Refrigerator: 2 °C~5 °C;
- c) Constant temperature water bath: 44.5 °C±0.2 °C;
- d) Balance: with sensitivity of 0.1 g;
- e) Homogenizer;
- f) Oscillator;
- g) Sterile pipette: with nominal capacities of 1 mL (graduated in 0.01 mL division) and 10 mL (graduated in 0.1 mL division) or micropipette and pipette tips;
- h) Sterile conical flask: with nominal capacities of 500 mL;

- i) Sterile culture dish: with diameter of 90 mm;
- j) pH meter, pH colorimetric tube or precision pH test paper;
- k) Bacterial colony counter;
- l) Ultraviolet lamp: with wavelength of 360 nm ~ 366 nm, and power not larger than 6 W.

4 Culture Mediums and Reagents

4.1 Lauryl sulfate tryptose (LST) broth: refer to section A.1 in Annex A.

4.2 *E.coli* broth: refer to section A.2 in Annex A.

4.3 Peptone water: refer to section A.3 in Annex A.

4.4 Buffer glucose peptone water [used for methyl red (MR) and V-P test]: refer to section A.4 Annex A.

4.5 Simmons citrate medium: refer to section A.5 in Annex A.

4.6 Phosphate buffer solution: refer to section A.6 in Annex A.

4.7 Eosin-methylene blue (EMB) agar: refer to section A.7 in Annex A.

4.8 Nutrient agar slant: refer to section A.8 in Annex A.

4.9 Violet red bile agar (VRBA): refer to section A.9 in Annex A.

4.10 Violet red cholate-4-methyl umbelliferone- β -D-glucoside agar (VRBA-MUG): refer to section A.10 in Annex A.

4.11 Gram stain solution: refer to section A.11 in Annex A.

4.12 Kovacs reagent: refer to section A.12 in Annex A.

4.13 Sterile NaOH solution (1 mol/L): refer to section A.13 in Annex A.

4.14 Sterile HCl solution (1 mol/L): refer to section A.14 in Annex A.

5 MPN Method for Enumeration of *Escherichia coli* (Method I)

5.1 Examination procedures

Refer to Figure 1 for the examination procedures of MPN method for enumeration of *Escherichia coli*.



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