

Tomato Juice Media

Tomato Juice Agar • Tomato Juice Agar Special

Tomato Juice Broth

Intended Use

Tomato Juice Agar is used for cultivating and enumerating *Lactobacillus* species.

Tomato Juice Agar Special is used for cultivating and enumerating lactobacilli and other acidophilic microorganisms from saliva and other specimens.

Tomato Juice Broth is used for cultivating yeasts and other aciduric microorganisms.

Summary and Explanation

In 1925, Mickle and Breed¹ reported the use of tomato juice in culture media used for cultivating lactobacilli. Kulp² investigated the use of tomato juice on bacterial development and found that the growth of *L. acidophilus* was enhanced. Tomato Juice Agar, prepared according to Kulp and White's³ modification, is especially useful in cultivating *L. acidophilus* from clinical specimens and foodstuffs.⁴

User Quality Control

Identity Specifications

Difco™ Tomato Juice Agar

Dehydrated Appearance: Tan, free-flowing, homogeneous.
Solution: 5.1% solution, soluble in purified water upon boiling. Solution is medium to dark amber, very slightly opalescent.

Prepared Appearance: Medium to dark amber, very slightly opalescent.

Reaction of 5.1% Solution at 25°C: pH 6.1 ± 0.2

Difco™ Tomato Juice Agar Special

Dehydrated Appearance: Tan, free-flowing, homogeneous.
Solution: 6.0% solution, soluble in purified water upon boiling. Solution is medium to dark amber, slightly opalescent.

Prepared Appearance: Medium to dark amber, slightly opalescent.

Reaction of 6.0% Solution at 25°C: pH 5.0 ± 0.2

Difco™ Tomato Juice Broth

Dehydrated Appearance: Tan, free-flowing, homogeneous and may contain dark particles.

Solution: 4.1% solution, soluble in purified water upon boiling. Solution is dark amber, clear.

Prepared Appearance: Dark amber, clear.

Reaction of 4.1% Solution at 25°C: pH 6.7 ± 0.2

Cultural Response

Difco™ Tomato Juice Agar

Prepare the medium per label directions. Inoculate using the pour plate technique and incubate at 35 ± 2°C for 40-48 hours.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY
<i>Lactobacillus acidophilus</i>	4356	10 ² -10 ³	Good
<i>Lactobacillus rhamnosus</i>	9595	10 ² -10 ³	Good
<i>Lactobacillus delbrueckii</i> subsp. <i>lactis</i>	4797	10 ² -10 ³	Good

Difco™ Tomato Juice Agar Special

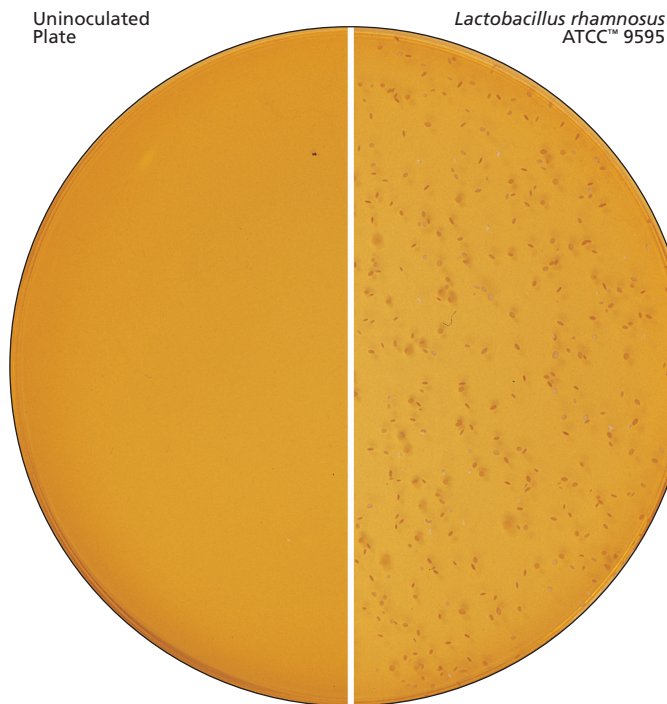
Prepare the medium per label directions. Inoculate and incubate at 35 ± 2°C for 18-48 hours (72 hours if necessary).

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<i>Lactobacillus acidophilus</i>	4356	10 ² -10 ³	Good
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Difco™ Tomato Juice Broth

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<i>Lactobacillus delbrueckii</i> subsp. <i>lactis</i>	4797	10 ² -10 ³	Good
<i>Saccharomyces cerevisiae</i>	9080	10 ² -10 ³	Good
<i>Saccharomyces cerevisiae</i>	9763	10 ² -10 ³	Good



Tomato Juice Agar Special is recommended for the direct plate count of lactobacilli from saliva and for cultivation of other acidophilic microorganisms. The acidic pH of Tomato Juice Agar Special encourages growth of lactobacilli while inhibiting growth of accompanying bacteria. The number of lactobacilli in saliva is an index of a predisposition to dental caries as described by Jay.^{5,6} Many dentists use the direct count of lactobacilli for the diagnosis of caries. This medium is more selective for lactobacilli than Tomato Juice Agar.

Tomato Juice Broth is recommended for use in cultivating and isolating yeasts, lactobacilli and other aciduric microorganisms from clinical specimens and foods.

Principles of the Procedure

Tomato Juice Agar and Tomato Juice Agar Special

Tomato juice is a source of carbon, protein and nutrients. Peptone provides a source of nitrogen, amino acids and carbon. Peptonized milk contains lactose as an energy source. Agar is the solidifying agent.

Tomato Juice Broth

Tomato juice is a source of carbon, protein and nutrients. Yeast extract is a source of trace elements, vitamins and amino acids. Dipotassium phosphate and monopotassium phosphate provide buffering capability. Magnesium sulfate, ferrous sulfate and manganese sulfate provide inorganic ions. Sodium chloride is a source of essential ions.

Formulae

Difco™ Tomato Juice Agar

Approximate Formula* Per Liter	
Tomato Juice (from 400 mL)	20.0 g
Peptone	10.0 g
Peptonized Milk	10.0 g
Agar	11.0 g

Difco™ Tomato Juice Agar Special

Approximate Formula* Per Liter	
Tomato Juice (from 400 mL)	20.0 g
Peptone	10.0 g
Peptonized Milk	10.0 g
Agar	20.0 g

Difco™ Tomato Juice Broth

Approximate Formula* Per Liter	
Tomato Juice (from 400 mL)	20.0 g
Yeast Extract	10.0 g
Dextrose	10.0 g
Dipotassium Phosphate	0.5 g
Monopotassium Phosphate	0.5 g
Magnesium Sulfate	0.1 g
Sodium Chloride	0.01 g
Ferrous Sulfate	0.01 g
Manganese Sulfate	0.01 g

*Adjusted and/or supplemented as required to meet performance criteria.

Directions for Preparation from Dehydrated Product

Equilibrate the medium to room temperature before opening.

1. Suspend the powder in 1 L of purified water:
 Difco™ Tomato Juice Agar – 51 g;
 Difco™ Tomato Juice Agar Special – 60 g;
 Difco™ Tomato Juice Broth – 41 g.
 Mix thoroughly.
2. Heat with frequent agitation and boil for 1 minute to completely dissolve the powder.
3. Autoclave at 121°C for 15 minutes. Avoid overheating Tomato Juice Agar Special, which could cause a softer medium.
4. Test samples of the finished product for performance using stable, typical control cultures.

Procedure

See appropriate references for specific procedures.

Expected Results

Refer to appropriate references and procedures for results.

References

1. Mickle and Breed. 1925. Technical Bulletin 110. N.Y. State Agriculture Exp. Station, Geneva, N.Y.
2. Kulp. 1927. Science 66:512.
3. Kulp and White. 1932. Science 76:17.
4. MacFaddin. 1985. Media for isolation-cultivation-identification- maintenance of medical bacteria, vol 1. Williams & Wilkins, Baltimore, Md.
5. Jay and Gordon (ed). 1938. Bacteriology and immunology of dental caries and dental science and dental art. Lea and Febiger, Philadelphia, Pa.
6. Jay, Pelton and Wisan. 1949. Dentistry in public health. W. B. Saunders Company, Philadelphia, Pa.

Availability

Difco™ Tomato Juice Agar

Cat. No. 211794 Dehydrated – 500 g*

Difco™ Tomato Juice Agar Special

Cat. No. 238910 Dehydrated – 500 g*

Difco™ Tomato Juice Broth

Cat. No. 251720 Dehydrated – 500 g*

251710 Dehydrated – 10 kg*

*Store at 2-8°C.