TETRATHIONATE BROTH BASE (as per IP) TM 413

INTENDED USE

For isolation of *Salmonellae* from faecal samples, sewage and other samples

COMPOSITION

Ingredients	Gms/Ltr
Sodium thiosulphate	40.700
Calcium carbonate	25.000
Peptic digest of animal tissue	4.500
Sodium chloride	4.500
Yeast extract	1.800
Meat extract	0.900

PRODUCT SUMMARY AND EXPLANATION

Tetrathionate Broth Base is used as a selective enrichment for the cultivation of Salmonella species that may be present in small numbers and compete with intestinal flora. *Salmonella* may also be injured in food-processing procedures, which include exposure to low temperatures, sub-marginal heat, drying, radiation, preservatives and sanitizers. Although injured cells may not form colonies on selective media, they can, if ingested, cause disease.

Tetrathionate Broth was originally described by Mueller who found that the medium selectively inhibited coliforms, thereby permitting enteric pathogens to grow virtually without restriction. Kaufmann modified Mueller's medium and achieved a higher percentage of isolates. The medium is now formulated according to Indian Pharmacopoeia. Compendium of Microbiological Examination of Foods and Standard Methods for the Examination of Water and Wastewater specify this medium as enrichment medium for Salmonella species.

PRINCIPLE

Medium contains Peptic digest of animal tissue, Meat extract & Yeast extract as the sole sources of carbon, nitrogen, vitamins and minerals. Sodium thiosulphate is the selective agent, to suppress commensal coliform organism. Terathionate is produced from Sodium thiosulphate by adding iodine to the culture medium. Such organisms are Salmonellae & Proteus species; those are having luxuriant growth in the medium and possess the enzyme tetrathionate reductase while other fecal organisms are inhibited due to production of tetrathionate. Calcium carbonate helps in neutralizing the acidic tetrathionate decomposition products. Members of the Proteus group reduce tetrathionate and may consequently impair the value of this medium for the isolation of salmonellae; this disadvantage of

the medium is largely overcome by the addition of 40mg of novobiocin to each millilitre of the incomplete medium before the addition of iodine. Sodium chloride helps to maintain the osmotic balance of medium.

INSTRUCTION FOR USE

1. Dissolve 77.40gms in 1000ml distilled water.
2. Gently heat to boiling with gentle swirling and dissolve the medium completely.
3. DO NOT AUTOCLAVE.
4. Cool below 45°C and add 20 ml iodine solution (Iodine 6gms and Potassium Iodide 5g in 20ml distilled water).
5. Mix well and dispense in 10 ml quantities.

Note: Due to the presence of calcium carbonate, the prepared medium forms opalescent solution with white precipitate.

QUALITY CONTROL SPECIFICATIONS

Appearance of Powder: Cream to yellow homogeneous free flowing powder
Appearance of prepared medium:
Complete medium with added brilliant green and iodine solution - Light green opalescent with white precipitate, on standing the precipitate settles down.
pH (at 25°C): 8.0 ± 0.2

INTERPRETATION:

Cultural characteristics observed after incubation at 35 - 37°C for 18 - 72 hours.

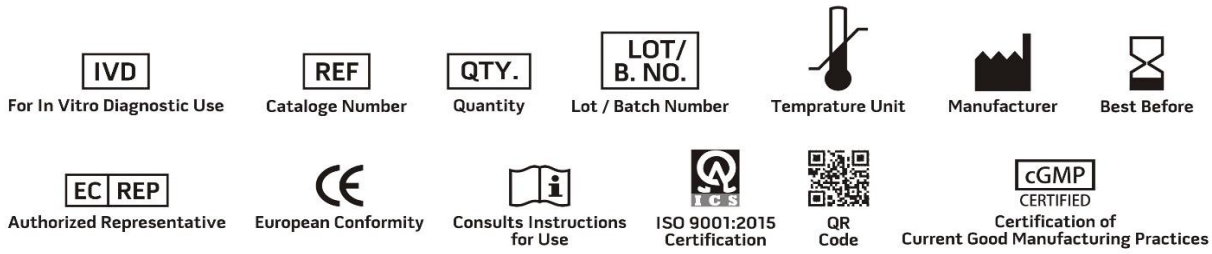
Microorganisms	ATCC	Inoculum (CFU/ml)	Growth	Colony Appearance
Salmonella typhimurium	14028	50-100	Luxuriant	Red with black centers
Salmonella abony	NCTC 6017	50-100	Good-Luxuriant	Red with black centers

STORAGE & STABILITY

Dehydrated powder, hygroscopic in nature, store in a dry place, in tightly-sealed containers below 25°C and protect from direct Sunlight. Under optimal conditions, the medium has a shelf life of 4 years. When the container is opened for the first time, note the time and date on the label space provided on the container. After the desired amount of medium has been taken out replace the cap tightly to protect from hydration.

REFERENCES

1. Mueller, Compt. Rend. Sco. Biol., 89:434. (1923).
2. Pollock M. R. and Knor R., Biochem J., 37:476. (1943).
3. Sorrells, Speck and Warren. 1970. Appl. Microbiol. 19:39
4. Kaufman. 1930. Zentrabl. Bakteriol. Parsitenkd. Infektionskr. Hyg. Abt. I Orig. 113:148.
5. Kaufman. 1935. Z. Hyg. Infektionskr. 117:26.
6. The Indian Pharmacopoeia (1996), Vol. II. 3.
7. Downes F P and Ito K(Eds.), 2001, Compendium of Methods For The Microbiological Examination of Foods, 4th ed., APHA, Washington, D.C.
8. Eaton A. D., Clesceri L. S. and Greenberg A W.,(Eds.), 2005, Standard Methods for the Examination of Water and Wastewater, 21st ed., APHA, Washington, D.C
9. Jeffries L. (1959) J. Clin. Path. 12. 568-571.
10. Buttiaux R., Catsaras M. and Verdant M. (1961) Ann. Inst. Pasteur de Lille 12. 13-18.
11. Hartman and Minich, J. Food and Prot., 44:385. (1981).



NOTE: Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.