SELENITE DULCITOL BROTH

- For in vitro use only - Catalogue No. TS47

Our Selenite Dulcitol Broth is used for the selective enrichment of *Salmonella* species from a variety of samples including food.

Leifson devised the original selenite formulation and demonstrated the efficacy of the medium for isolating *Salmonella* from clinical specimens. Selenite Dulcitol Broth is a modification of Leifson's recipe where dulcitol is added to the broth to improve the recovery of *Salmonella*. Raj reported that dulcitol greatly improved recovery of *Salmonella*, and resulted in much greater sensitivity when compared to other selenite-containing enrichment broths.

The presence of a fermentable carbohydrate, such as dulcitol, helps to elicit growth of *Salmonella* while other *Enterobacteriaceae* such as *Proteus* cannot utilize this carbohydrate. Proteose peptone and yeast extract provide the bacteria with amino acids, vitamins, and other vital growth factors. Phosphate is added to help maintain a stable pH, since reduction of the sodium selenite results in an alkaline shift in the pH of the broth. Sodium selenite is a selective agent that inhibits gram-positive organisms as well as most *Enterobacteriaceae*. The retarding effects of sodium selenite are temporary and therefore sub-culturing before 24 hours of incubation is essential for good recovery of *Salmonella*.

Formula per Litre of Medium

Proteose peptone ..... 4.0 g
Yeast extract ..... 1.5 g
Sodium phosphate (dibasic) ..... 1.25 g
Potassium phosphate (Monobasic) ..... 1.25 g
Sodium Selenite ..... 5.0 g
Dulcitol ..... 4.0 g

pH 6.9 ± 0.2

Recommended Procedure

(Depending on sample please consult appropriate references for a more detailed testing protocol)

1. Inoculate the Selenite Dulcitol Broth with the sample.
2. Incubate the tubes with loose caps for 12-18 hours at 35°C.
3. Subculture onto a selective and differential media such as SS or XLD agar to isolate potential *Salmonella* colonies.
4. Incubate plates for 24 hours at 35°C and examine plates for growth.

Quality Control

After checking the medium for correct pH, colour, depth, and sterility, the following organisms are used to determine the performance of the completed medium. The tubes are incubated at 35°C and sub-cultured onto MacConkey Agar after 18 hours. MacConkey plates are incubated at 35°C for 24 hours and then examined.

Organism	Expected Results
Salmonella typhimurium ATCC 14028	Growth
Escherichia coli ATCC 25922	Inhibition (partial)

Interpretation of Results

Selenite Dulcitol Broth is intended only for use as an enrichment step for isolating *Salmonella*. Growth is observed as a turbid, orange solution. The inhibitory effects of sodium selenite is markedly reduced after 24 hours of incubation, therefore sub-culturing onto a selective, differential medium is essential prior to 24 hours.

Ideally, Selenite Dulcitol Broth should be sub-cultured after 12-18 hours of incubation to prevent the overgrowth of *Salmonella* by other gram-negative bacteria. For more information of typical *Salmonella* colonies refer to an appropriate technical source depending on the type of selective, differential medium used.

Additional biochemical and/or serological tests should be performed on isolated colonies from pure culture to complete identification.

- *Do not use if excess red precipitate (reduced selenite) is observed at the bottom of the tube*

- *Sodium acid selenite is highly toxic and therefore tubes should be handled with care and attention*

Storage and Shelf Life

Our Selenite Dulcitol Broth should be stored in an upright position at 4°C to 8°C and protected from light. Under these conditions the medium has a shelf life of 6 weeks from the date of manufacture.

References

1. Leifson E. New selenite selective enrichment medium for the isolation of typhoid and paratyphoid bacilli." Am J Hyg 1935; 24:423-32.
2. Raj H. Enrichment medium for selection of *Salmonella* from fish homogenate. Appl Microbiol 1966; 14:12-20.
3. Sanborn WR, Lesmana M, Edwards EA. Enrichment culture coagulation test for rapid, low-cost diagnosis of salmonellosis. J Clin Microbiol 1980; 12:151-5.
4. Murray, P.R., E. Baron, M. Pfaller, F. Tenover, R. Yolken. Manual of Clinical Microbiology. 7th ed. Washington: ASM, 1999.

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