

TM 2100 – GLUCOSE OF MEDIUM (ISO 21528-2:2017)

INTENDED USE

Recommended for the determination of oxidative and fermentative metabolism of carbohydrates by gram-negative bacteria.

PRODUCT SUMMARY AND EXPLANATION

Hugh and Leifson developed OF Medium to study oxidative and fermentative metabolism of carbohydrates by gram-negative bacteria. This criterion is used during taxonomic studies of Enterobacteriaceae. Glucose is the most important carbohydrate for use in OF Basal Medium.

Glucose OF Medium is recommended by ISO Committee. However, certain organisms may metabolize other carbohydrates even if they are unable to utilize dextrose. Degradation of the carbohydrate to acid is indicated by the pH indicator bromothymol blue which changes its colour to yellow. Oxidative utilization takes place when the medium is exposed to air while fermentative utilization occurs under exclusion of air. When a gram-negative organism is inoculated in this medium containing a carbohydrate in duplicate, of which one tube is covered with mineral oil to exclude oxygen and the second tube is uncovered; reactions of differential value can be observed. Fermentative organisms will produce an acid reaction in both the covered and uncovered medium. Oxidative organisms will produce an acid reaction in the uncovered medium and give slight growth without change in the covered medium. Organisms which are not classified either as oxidative or fermentative show no change in the covered medium and an alkaline reaction in the uncovered medium. The acidic reaction of oxidative organisms is more apparent at the surface of the medium that gradually spreads throughout the medium. If the oxidation reaction is weak or slow, an initial alkaline reaction at the surface of the uncovered tube may persist for several days and eventually convert to an acid reaction.

COMPOSITION

Ingredients	Gms / Ltr
Tryptone	2.000
Sodium chloride	5.000
Disodium hydrogen phosphate	0.300
Glucose (Dextrose)	10.000
Bromo thymol blue	0.080
Agar	3.000

PRINCIPLE

The medium consists of Casein enzyme hydrolysate, peptic digest of animal tissue, meat extract and yeast extract which serves as a source of carbon, nitrogen, vitamins and minerals. Disodium phosphate and mono potassium phosphate are buffering agents. Addition of ferric ammonium citrate in the medium helps to differentiate the esculin hydrolysis, resulting in the blackening of the medium by *Listeria* species. Lithium chloride and high salt concentration makes the medium selective for *Listeria* species.

INSTRUCTION FOR USE

- Dissolve 20.38 grams in 1000 ml purified / distilled water.
- Heat to boiling to dissolve the medium completely.
- Dispense in tubes in duplicate for aerobic and anaerobic fermentation. Sterilize by autoclaving at 15 psi pressure (121°C) for 15 minutes.
- Mix well and dispense as desired.

QUALITY CONTROL SPECIFICATIONS

Appearance of Powder : Cream to greenish yellow homogeneous free flowing powder.
Appearance of prepared medium : Green coloured clear to slightly opalescent gel forms in tubes.
pH (at 25°C) : 6.8±0.2

INTERPRETATION

Cultural characteristics observed after incubation.

Microorganism	ATCC	Inoculum (CFU/ml)	Aerobic	Anaerobic (overlaid with mineral oil)	Incubation temperature	Incubation Period
<i>Acinetobacter baumannii</i>	19606	50-100	Acidic reaction, yellowing of the medium	Alkaline reaction, green colour of the medium	35-37°C	18-48 Hours
<i>Alcaligenes faecalis</i>	8750	50-100	Alkaline reaction, green colour of the medium	Alkaline reaction, green colour of the medium	35-37°C	18-48 Hours
<i>Escherichia coli</i>	25922	50-100	Acidic reaction, yellowing of the medium	Acidic reaction, yellowing of the medium with gas formation	35-37°C	18-48 Hours
<i>Klebsiella aerogenes</i>	13048	50-100	Acidic reaction, yellowing of the medium	Acidic reaction, yellowing of the medium with gas formation	35-37°C	18-48 Hours
<i>Pseudomonas aeruginosa</i>	9027	50-100	Acidic reaction, yellowing of the medium	Alkaline reaction, green colour of the medium	35-37°C	18-48 Hours
<i>Salmonella</i> Enteritidis	13076	50-100	Acidic reaction, yellowing of the medium with gas formation	Acidic reaction, yellowing of the medium with gas formation	35-37°C	18-48 Hours
<i>Shigella flexneri</i>	12022	50-100	Acidic reaction, yellowing of the medium	Acidic reaction, yellowing of the medium	35-37°C	18-48 Hours
<i>Vibrio cholerae</i>	15748	50-100	Acidic reaction, yellowing of the medium	Acidic reaction, yellowing of the medium	35-37°C	18-48 Hours

PACKAGING:

In pack size of 500 gm bottles.



STORAGE

Dehydrated powder, hygroscopic in nature, store in a dry place, in tightly-sealed containers between 25-30°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.

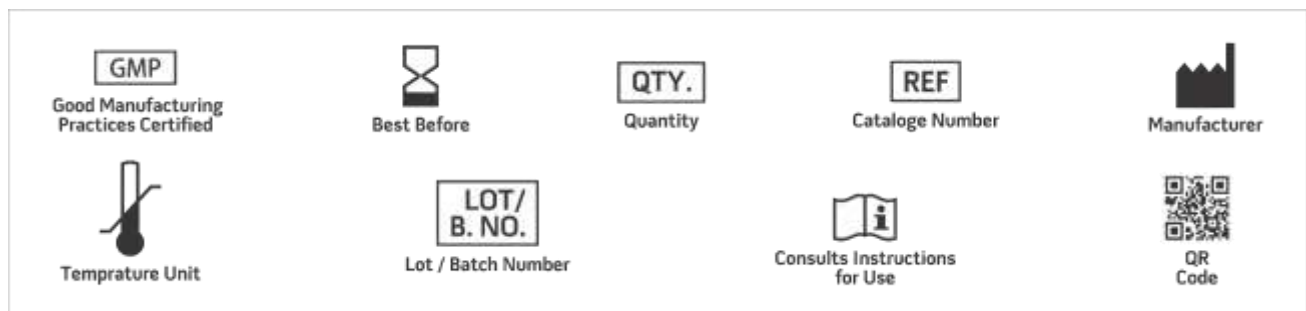
Product Deterioration: Do not use if they show evidence of microbial contamination, discoloration, drying or any other signs of deterioration.

DISPOSAL

After use, prepared plates, specimen/sample containers and other contaminated materials must be sterilized before discarding.

REFERENCES

1. Hugh R. and Leifson E., 1953, J. Bacteriol. 66:24.
2. Isenberg, H.D. Clinical Microbiology Procedures Handbook. 2 nd Edition.
3. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.
4. MacFaddin J. F., 1985, Media for the Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. I, Williams and Wilkins, Baltimore.
5. Microbiology of food chain-Horizontal method for detection and enumeration of Enterobacteriaceae International Organization for Standardization (ISO), 21528-2.
6. Salfinger Y., and Tortorello M.L. Fifth (Ed.), 2015, Compendium of Methods for the Microbiological Examination of Foods, 5th Ed., American Public Health Association, Washington, D.C.



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

***For Lab Use Only**
Revision: 09 Mar., 2023