 Kligler Iron Agar is preferred for the isolation and identification of Staphylococcus species.

**Kligler Iron Agar**

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| REF: V.1/KI01.100.0100 100 gram REF: V.1/KI01.250.0250 250 gram |  REF: V.1/KI01.500.0500 500 gram  |

# CLINICAL SIGNIFICANCE

# Kligler Iron Agar differentiates between lactose-fermenting and nonlactose-fermenting Gram-negative bacilli. It differentiates Salmonella Typhi from other Salmonellae and also Salmonella Paratyphi A from Salmonella Scottmuelleri and Salmonella Enteritidis. Pure cultures of suspected organisms from plating media such as MacConkey Agar, Bismuth Sulphite Agar, or Deoxycholate Citrate Agar, Salmonella Shigella Agar etc. are inoculated on Kligler Iron Agar for identification.

# METHOD PRINCIPLE

# Phenol red is the pH indicator, which exhibits a color change in response to acid produced during the fermentation of sugars. Fermentation of dextrose results in production of acid, which turns the indicator from red to yellow. Since there is little sugar i.e. dextrose, acid production is very limited and therefore a reoxidation of the indicator is produced on the surface of the medium, and the indicator remains red. However, when lactose is fermented, the large amount of acid produced, avoids reoxidation and therefore the entire medium turns yellow. The combination of ferrous sulphate and sodium thiosulphate enables the detection of hydrogen sulphide production, which is evidenced by a black color either throughout the butt, or in a ring formation near the top of the butt. Lactose non-fermenters (e.g., Salmonella and Shigella) initially produce a yellow slant due to acid produced by the fermentation of the small amount of glucose (dextrose). When glucose (dextrose) supply runs out in the aerobic environment of the slant, the reaction reverts to alkaline (red slant) due to oxidation of the acids produced. The reversion does not occur in the anaerobic environment of the butt, which therefore remains acidic (yellow butt).Lactose fermenters produce yellow slants and butts because of lactose fermentation. The high amount of acids thus produced helps to maintain an acidic pH under aerobic conditions. Tubes showing original color of the medium indicate the fermentation of neither glucose (dextrose) nor lactose. Gas production (aerogenic reaction) is detected as individual bubbles or by splitting or displacement of the agar by the formation of cracks in the butt of the medium.

# MEDIA COMPOSITION

|  |  |
| --- | --- |
| **Item**  | **Formula in g/L**  |
| PeptoneBeef extractYeast extract TryptoneLactoseDextroseFerrous sulphate Sodium chlorideSodium thiosulphate Phenol redAgar  | 153351010.250.30.02415 |

## Final pH 7.4 ± 0.2 at 25°C

# PRECAUTIONS AND WARNINGS

Media to be handled by entitled and professionally educated person.

Good Laboratories practices using appropriate precautions should be followed in:

* Wearing personnel protective equipment (overall, gloves, glasses...).
* Do not pipette by mouth.
* In case of contact with eyes or skin; rinse immediately with plenty of soap and water. In case of severe injuries, seek medical advice immediately.
* Handle specimens and inoculated culture bottles as though capable of transmitting infectious agents. All inoculated culture bottles, specimen collection needles, and blood drawing devices should be decontaminated according to country requirement for waste disposal.

S56: dispose of this material and its container at hazardous or special waste collection point.

S57: use appropriate container to avoid environmental contamination.

S61: avoid release in environment.

For further information, refer to the Kligler Iron Agar material safety data sheet.

# MEDIA STORAGE AND STABILITY

**Lab.Vie**. Kligler Iron Agar should be stored between 10-30°C in a firmly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to avoid lump development due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in a dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Product performance is best if used within stated expiry period.

## PROCEDURE

## Suspend 57.52 grams in 1000 ml distilled water.

## Adjust pH to 7.4 ± 0.2 at 25°C.

##  Heat to boiling to dissolve the medium completely.

## Mix well and distribute into sterile test tubes.

## Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

## Allow the tubes to cool in slanted position

## Deterioration

**Lab.Vie**. Kligler Iron Agar is cream to yellow homogeneous free flowing powder. Prepared Media is reddish orange in color. If there are any physical changes for powder or signs of deterioration (shrinking, cracking, or discoloration), and contaminations for hydrated media, discard the medium.

**SPECIMEN COLLECTION AND PRESERVATION**

# For clinical samples follow appropriate techniques for handling specimens as per established guidelines (11, 12). For food and dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (9, 10, 13). After use, contaminated materials must be sterilized by autoclaving before discarding.

# TYPE OF SPECIMEN

# Clinical samples, water samples, food and dairy samples

# EQUIPMENT REQUIRED NOT PROVIDED

# Sterile cups

# Sterile plates

# Incubator

# Autoclave

# QUALITY CONTROL

To ensure adequate quality control, it is recommended that positive and negative control included in each run. If control values are found outside the defined range, check the system performance. If control still out of range please contact the technical support.

# PERFORMANCE CHARACTERISTICS

Cultural characteristics observed after incubation at 35 - 37°C for 18 - 48 hours

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Microorganism** | **Slant Slope** | **Colony Colour** | **Gas** | **H2S** |
| *Shigella sonnei NCTC 8574* | Red | Yellow | - | - |
| *Shigella flexneri ATCC 12022* | Red | Yellow | - | - |
| *Salmonella typhi ATCC 6539* | Red | Yellow | - | + |
| *Salmonella species* | Red | Yellow | + | + |
| *Enterobacter species* | Red | Yellow | + | - |
| *Klebsiella species* | Yellow | Yellow | - | + |
| *Escherichia coli ATCC 25922* | Yellow | Yellow | + | + |
| *Proteus mirabilis ATCC 12453* | Red | Yellow | - | + |
| *Citrobacter freundii ATCC 8090* | Yellow | Yellow | + | + |
| *Salmonella Schottmuelleri ATCC 10719* | Red | Yellow | + | + |
| *Salmonella Paratyphi A ATCC 9150* | Red | Yellow | + | - |
| *Salmonella Enteritidis ATCC 13076* | Red | Yellow | + | + |

# REFERENCES

1. Kligler I. J., 1917, Am. J. Publ. Health, 7:1041.

2. Kligler I. J., 1918, J. Exp. Med., 28:319.

3. Baird R.B., Eaton A.D., and Rice E.W., (Eds.), 2015, Standard Methods for the Examination of Water and Wastewater, 23rd ed., APHA, Washington, D.C.

4. Russell, F. F. 1911. The isolation of typhoid bacilli from urine and feces with the description of a new double sugar tube medium. J. Med. Res. 25:217.

5. MacFaddin, J. F. Media for isolation-cultivation-identificationmaintenance of medial bacteria, Williams & Wilkins, Baltimore, MD

6. Bailey Sadie F. and Lacey G. R. (1927) J. Bact. 13. 182-189.

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| **SYMBOLS IN PRODUCT LABELLING**  |
|   IVD For in-vitro diagnostic use  |   Number of <n> test in the pack  |
|  LOT Batch Code/Lot number  | A black and white triangle with a exclamation mark  Description automatically generated Caution  |
|  REF Catalogue Number  | Do not use if package is damaged   |
|   Temperature Limitation   Expiration Date   Manufactured by  |  Consult Instruction for use      |