

**A.S.D. Government Degree College for Women (A),
Kakinada**

DEPARTMENT OF MICROBIOLOGY



BEST PRACTICE

**Isolation of Native Microorganisms from the Natural
Resources soil, water & Drainage (Fungi and Bacteria)**

Isolation of Native Microorganisms from the Natural Resources soil, water & Drainage (Fungi and Bacteria)

(i) Isolation of *Escherichia coli* (*E.coli*) From Sewage

Title of the practice: Isolation of *E. coli* from sewage sample

Objective of the practice:

- To provide skill-based knowledge
- Hands on experience
- To inculcate research attitude to the advanced learning and meritorious students:

Resources required:

- Source sample
- Mac Conkey agar & EMB Agar
- Biochemical media for fermentation of different sugars, indole, methyl red, Voges Proskauer, citrate utilization [IMViC] tests
- Grams staining reagents
- Other routine laboratory equipment

The Context:

- To learn how to handle natural microorganisms from natural resources as they may not cause major harm while learning. This practice helps them to get trained before they handle clinical samples.
- Aseptic handling of laboratory equipment & instrumentation, basic working principles.
- Culture maintenance practices.

The Practice

- Media preparation
- sample collection
- Inoculation
- Identification
- Pure culture preparation & Preservation

Procedure:

1. Media preparation:

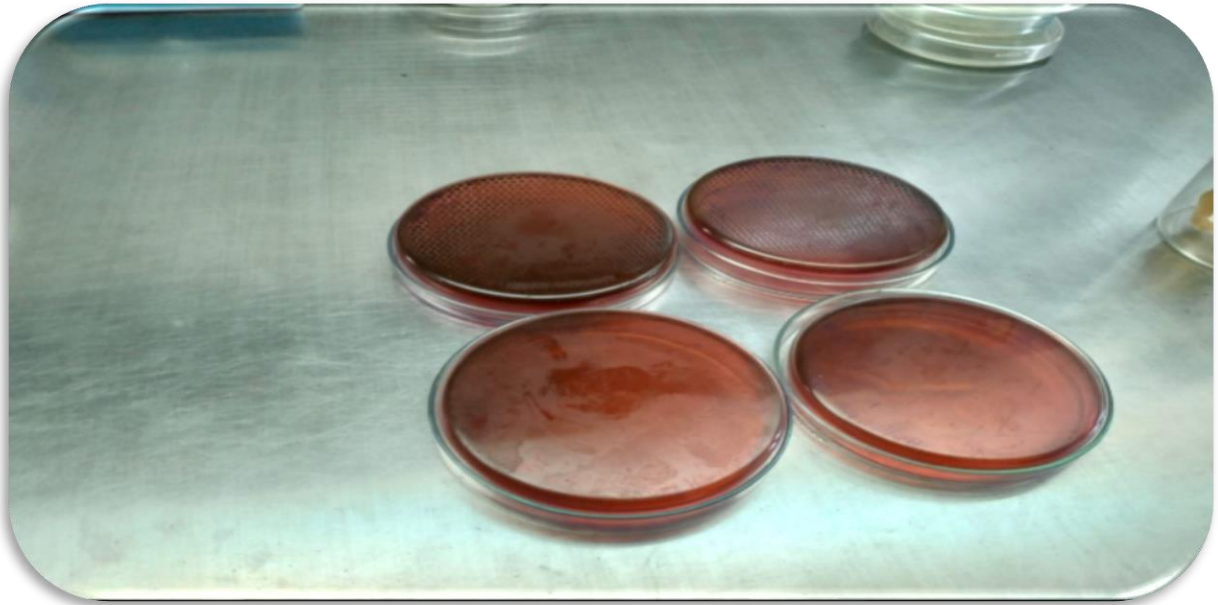


2. sample collection:

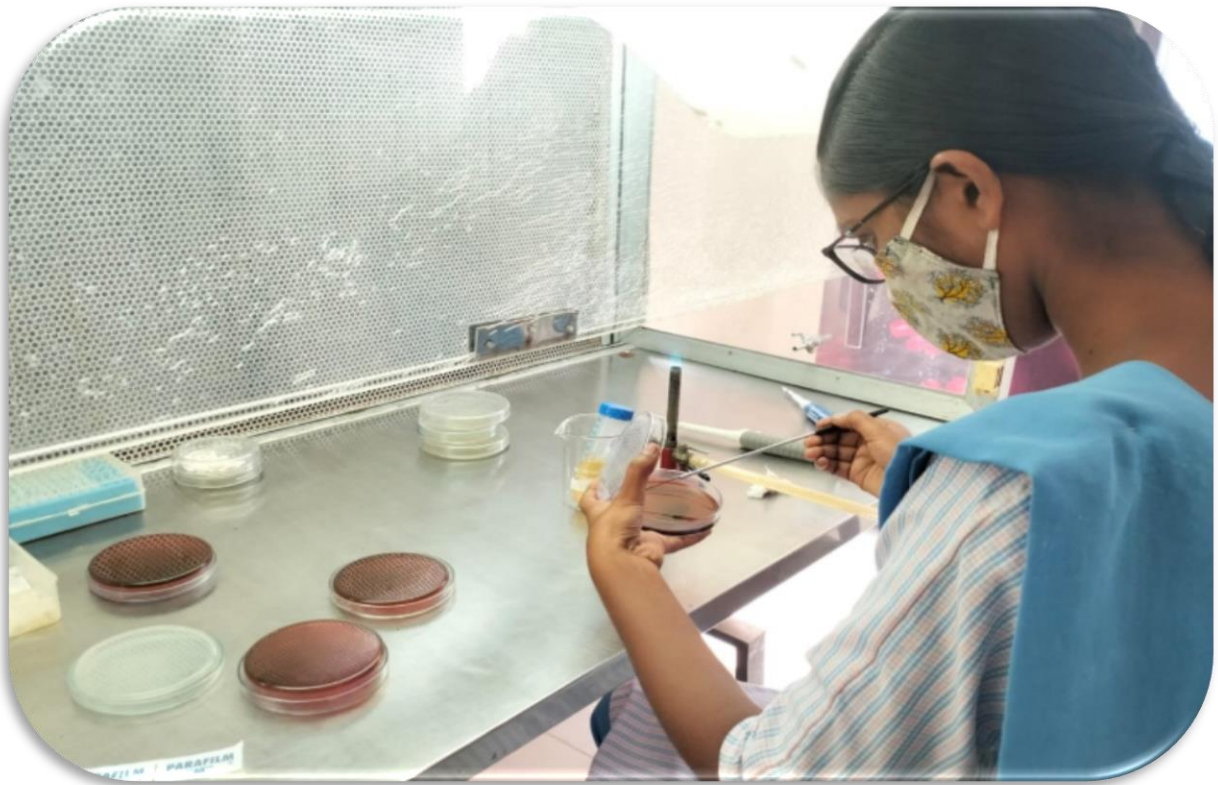


Fig: Collection of different sewage samples

3.Plating:



4.Inoculation:



5.incubation:

The incubation period for *E.Coli* (*Escherichia coli*) can range from 2 to 14 days, with a median of 3 to 4 days. The incubation period depends upon on the type of *E.Coli* strain.

6.Observation:

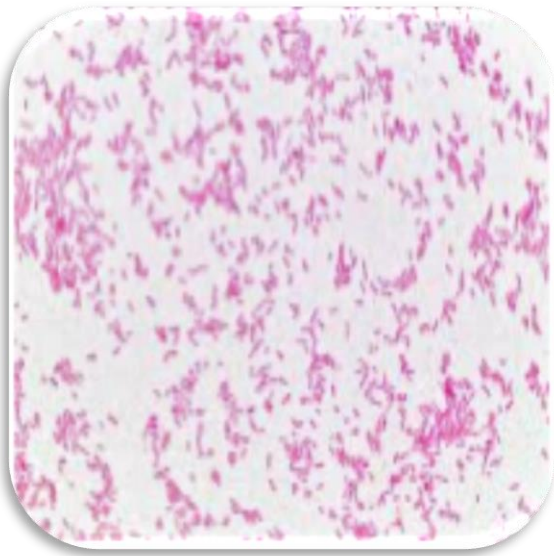


Fig: Microscopic observation by Gram staining of *E.coli* Agar



Fig: Colonies on Mac Conkey Agar



Fig: Colonies on EMB Agar



Fig: Colonies on Nutrient Agar



Fig: Colonies of *E.coli* on different medias both minimal, differential & Selective

7. Result: We have successfully isolated the native microorganism (*E.coli* bacterium) from natural resource sample (Sewage).

- ❖ **Expected Outcome of Practice:** Students will get skills related to isolation of Bacteria, Handling of clinical samples, Identification techniques which are necessary to be placed in any microbiology laboratory.

(ii) Isolation of *Aspergillus* and *Penicillium* species from natural resources

Aim: To isolate and identify *Aspergillus* and *Penicillium* from coconut, onion, and bread samples.

Materials Needed:

1. Coconut, onion, and bread with Mold growth
2. Sterile water
3. Sterile petri dishes
4. Agar medium (e.g., Potato Dextrose Agar)
5. Inoculation loop
6. Incubator
7. Microscope
8. Gloves and lab coat

Sample Collection:

Collect coconut, onion, and bread samples from different sources. Ensure the samples are fresh and not contaminated.

Procedure:

Sample Preparation: Cut the coconut, onion, and bread samples into small pieces. Surface-sterilize the samples by dipping them in 70% ethanol for 1-2 minutes.

Aspergillus growth on Coconut

Penicillium growth on Coconut

Fungus growth on bread & Mold

Conclusion: -

Penicillium species were successfully isolated from coconut, onion, and bread Mold using agar medium and microscopic examination. The isolated pure cultures can be used for further studies, such as identification of species, antimicrobial activity, and other applications.

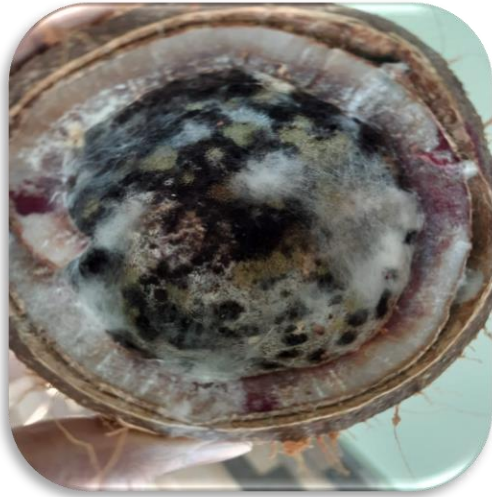
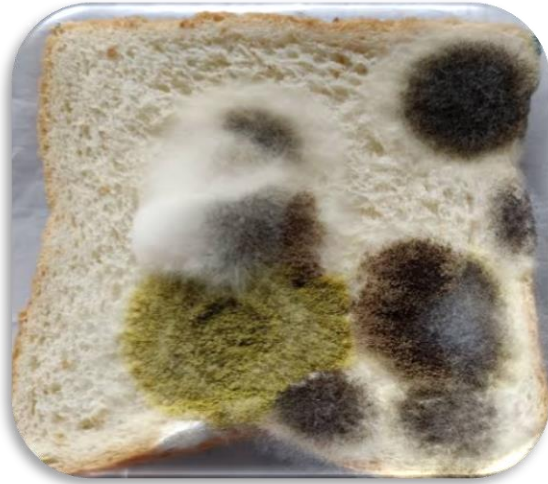


Fig:Aspergillus growth on Coconut



Penicillium growth on Cocconut after 3 days



Penicillium growth on bread



Aspergillus on onions

Conclusion: Growth of Fungal species on culture medias were isolated



Limitations:

Could not able to identify at the species level of isolated microorganisms in the case of Fungus and for Bacterial species strain level identification needs further infrastructure

Conclusion:

Activity enhanced scientific temper among the Microbiology students

