

## **Practical: Study of Coliform bacteria from water sample using EMB medium**

### **Set up Questions:**

#### **Q1. What is EMB Agar?**

Ans: It is an Eosin Methylene Blue Agar

#### **Q2. Why EMB Agar is used in study of coliform bacteria?**

Ans: EMB is a selective and differential medium used to isolate fecal coliforms. Eosin Y and methylene blue are pH indicator dyes which combine to form a dark purple precipitate at low pH; they also serve to inhibit the growth of most Gram positive organisms. Sucrose and lactose serve as fermentable carbohydrate sources which encourage the growth of fecal coliforms and provide a means of differentiating them.

#### **Q4. Is EMB Agar selective or differential?**

Ans: EMB (also known as "Levine's formulation") is a selective stain for Gram-negative bacteria. EMB contains dyes that are toxic to Gram-positive bacteria. EMB is the selective and differential medium for coliforms.

#### **Q5. What ingredient makes EMB selective?**

Ans: EMB Agar is a Selective & Differential Medium. The selective and differential aspects are due to the dyes Eosin Y and Methylene Blue, and the sugars lactose and sucrose in the medium. It is Selective because it encourages some bacteria to grow while inhibiting others.

#### **Q5. What colour is *Escherichia coli* on EMB?**

Ans: On EMB Agar, Levine, isolated colonies of lactose-fermenting bacteria appear brown to blue-black in colour. *Escherichia coli* appears as large, blue-black colonies, often with a green metallic sheen.

#### **Q6. What causes metallic sheen to EMB Agar with *Escherichia coli* ?**

Ans: Vigorous fermenters of lactose or sucrose will produce quantities of acid sufficient to form the dark purple dye complex. The growth of these organisms will appear dark purple to black. *Escherichia coli*, a vigorous fermenter, often produces a green metallic sheen. Slow or weak fermenters will produce mucoid pink colonies.