

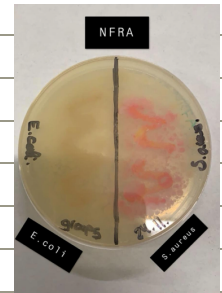
Laboratory 10: Biochemical activities of bacteria.

Tests Results:

*** Lipid hydrolysis:** (NRFA)

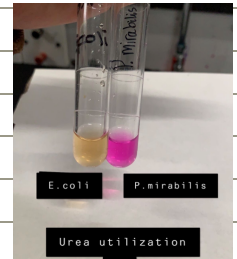
if lipase is present fats are hydrolyzed to glycerol and fatty acids → Changing pH → gives a pink color

- *E. coli* → negative
- *S. aureus* → positive (has the lipase) Break down lipids

*** Urea utilization:** Checking the presence of urease → break down urea → free ammonia → lift pH

- *E. coli* → -
- *P. mirabilis* → +

that makes it Alkaline

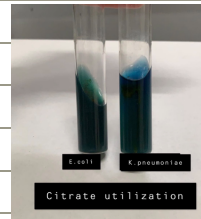
*** Citrate Utilization:** Aerobic process which increase pH

Bromophenol blue → as indicator

Blue → High pH
Green → Low pH

Blue + (due to the presence of ammonia) green → negative

- *E. coli* → -
- *K. pneumoniae* → +

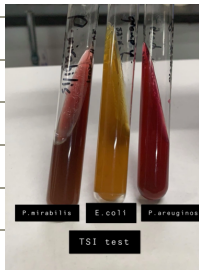
*** Gelatin Liquefaction:** Positive results breakdown all gelatine → Liquid

- *E. coli* → Solid (-)
- *P. aeruginosa* → Liquid (+)

*** TSI test:** we can check for the fermentation of lactose

- everything goes yellow → fermentation of lactose
- yellow bottom and pink top → glucose fermentation only
- if nothing is yellow → no fermentation

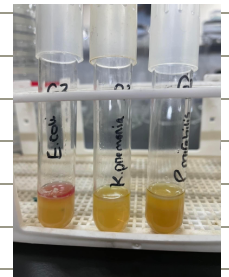
- *E. coli* → + / produce gas push
- *P. mirabilis* → yellow bottom pink top + it has black lines → indication of H_2S
- *P. aeruginosa* → All red (-) no fermentation negative for all results.

*** SIM test:** (Sulfide, motility, Indole) Adding Kovacs Indicator.

turbidity → motil black ppt → Sulfide Indole → by adding Kovacs "pink"

	<i>E. coli</i>	<i>K. pneumoniae</i>	<i>P. mirabilis</i> → Should have black ppt.
motility	+	-	+
Sulfide	-	-	+
Indole	+	-	-

Indole → tryptophanase → Break tryptophan → produce indole by adding Kovacs agent.

*** Starch utilization** → Production of amylase / Using IKI

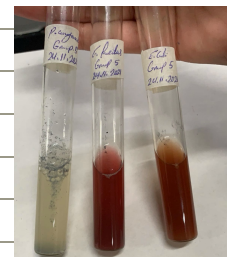
- *E. coli* → -
- *B. subtilis* → +

*** Nitrate Reduction:**

- *E. coli* → + Red
- *P. aeruginosa* → +
- *E. fecalis* → -

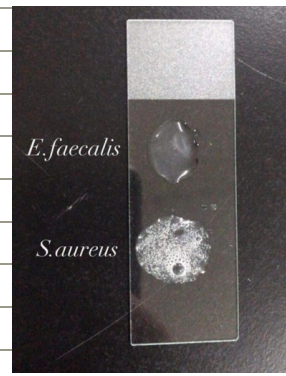
With the 2 steps.

Zinc → presence of nitrate.



* **Catalase:** gas bubbles indicate the presence of catalase

- *E. faecalis* → -
- *S. aureus* → +



* **Oxidase:**

- *P. aeruginosa* → +
- *E. coli* → -

