

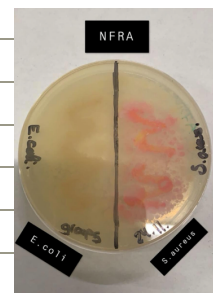
Laboratory 10: Biochemical activities of bacteria.

Tests Results:

*** Lipid hydrolysis: (NRFA)**

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

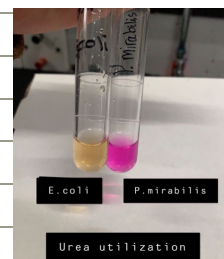
- E. coli → negative
- S. aureus → positive (has the lipase) Break down lipids



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

- E. coli → -
- P. mirabilis → +

That makes it Alkaline



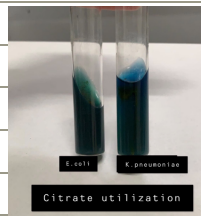
*** Citrate Utilization:** Aerobic process which increase pH

Bromophenol blue → as indicator

Blue → High pH
Green → Low pH

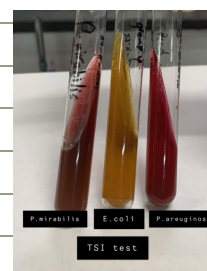
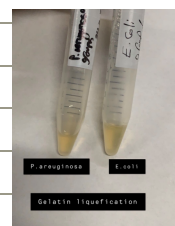
Blue + (due to the presence of ammonia) green → negative

- E. coli → -
- K. pneumoniae → +



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

- F. 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

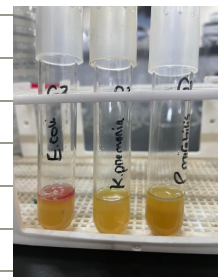
- E. coli → + / produce gas push
- P. mirabilis → yellow bottom pink top + it has black lines → indication of H₂S
- P. aeruginosa → All red (-) no fermentation negative for all results.

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

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

	E. coli	K. pneumoniae	P. mirabilis → 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 → +

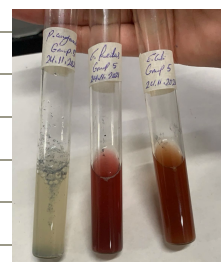


*** Nitrate Reduction:**

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

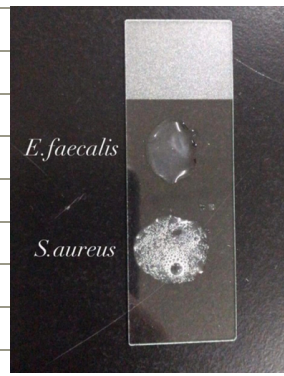
With the 2 steps.

Zinc → presence of nitrate.



* Catalase: gas bubbles indicate the presence of catalase

- *E. faecalis* → -
- *S. aureus* → +



* Oxidase:

- *P. aeruginosa* → +
- *E. coli* → -

