

Biochemical reaction for *Vibrio Cholera*

Glucose	Lactose	Maltose	Manite	Sucarose	Indole	*Cholera red reaction
A	A	A	A	A	positive	positive
No gas	No gas	No gas	No gas	No gas		

A : Acid production.

***Cholera red reaction:** Reduce nitrate to nitrite.

Method: Inoculate peptone water with the organism and incubate at 37° C for 24h. Nitrate in peptone Reduced to nitrite and indole is produced. Indole combines with nitrite with production of nitroso-indole. Addition of few drops of sulphuric acid produce a red colour.

Biochemical reaction for *Shigella Dysenteriae*

<i>Glucose</i>	<i>Lactose</i>	<i>Maltose</i>	<i>Mannite</i>	<i>Sucrose</i>	<i>Indole</i>	<i>M.R.</i>	<i>V.P.</i>	<i>Citrate</i>	<i>Urease</i>	<i>H₂S</i>
A No gas	negative	negative	negative	negative	negative	positive	negative	negative	negative	negative

A : Acid production.

Biochemical reaction for *Shigella Sonnei*

	Glucose	Lactose	Maltose	Mannite	Sucrose	Indole	M.R.	V.P.	Citrate	Urease	H ₂ S
A	No gas	No gas	negative	No gas	negative	negative	positive	negative	negative	negative	negative

A : Acid production.

Biochemical reaction for **Escherichia Coli**

<i>Glucose</i>	<i>Lactose</i>	<i>Maltose</i>	<i>Mannite</i>	<i>Sucrose</i>	<i>Indole</i>	<i>M.R.</i>	<i>V.P.</i>	<i>Citrate</i>	<i>Urease</i>	<i>H₂S</i>
AG	AG	AG	AG	AG	positive	positive	negative	negative	negative	negative

AG : Acid and Gas production.

Biochemical reaction for **Klebsiella Aerogenes**

Glucose	Lactose	Maltose	Manite	Sucrose	Indole	M.R.	V.P.	Citrate	Urease	H₂S
AG	AG	AG	AG	AG	negative	negative	positive	positive	positive	negative

AG : Acid and Gas production.

Biochemical reaction for *Shigella Flexneri*

Glucose	Lactose	Maltose	Mannite	Sucrose	Indole	M.R.	V.P.	Citrate	Urease	H ₂ S
A No gas	negative	negative	A No gas	negative	negative	positive	negative	negative	negative	negative

A: Acid production.

Lactose fermentation on MacConkey agar

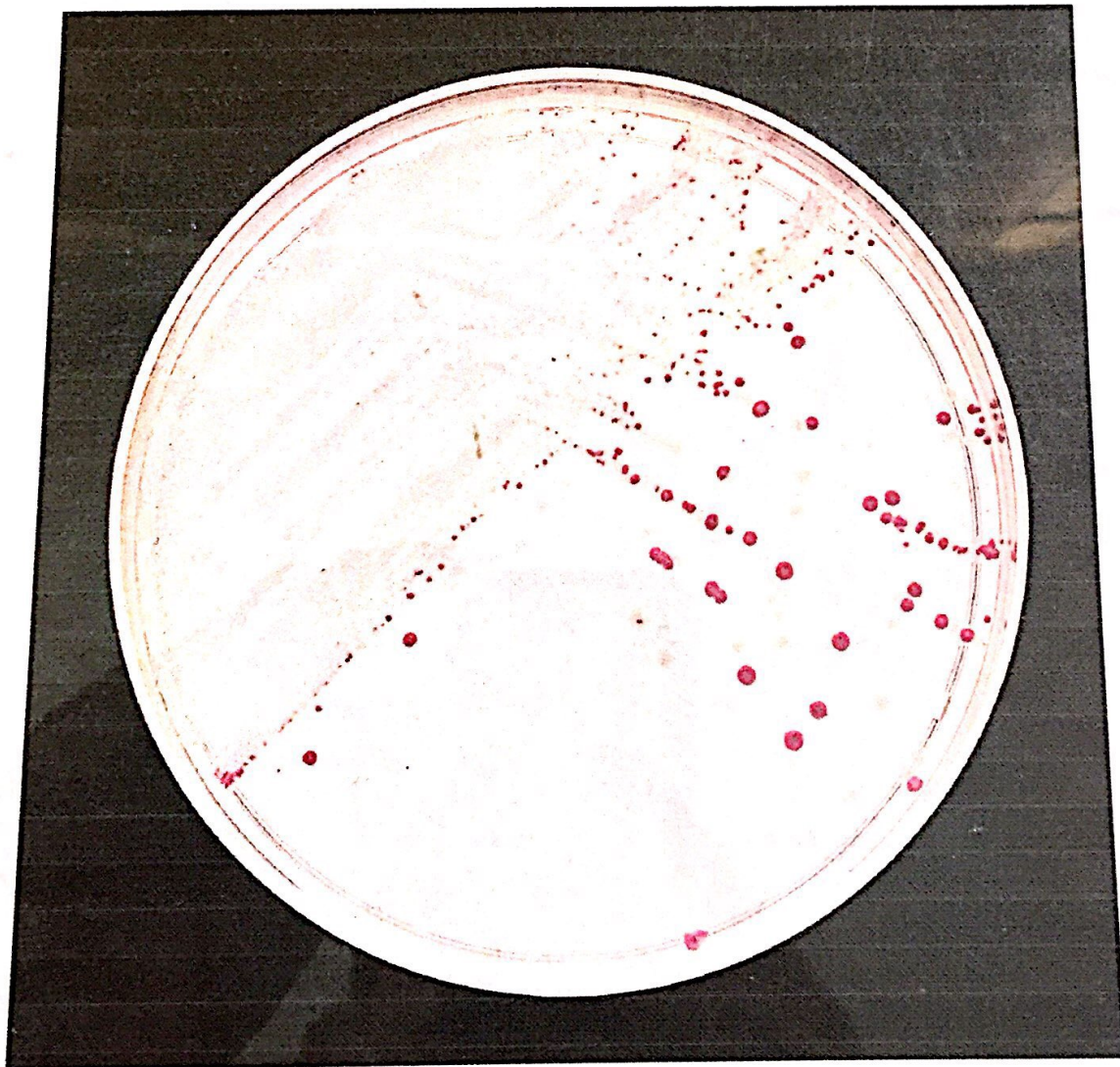
- lactose fermentation by producing pink colonies.
- The lactose fermenters e.g. *E. coli*, *Klebsiella* and *Citrobacter*.



ASM MicrobeLibrary.org © Allen

Non-lactose fermentation on MacConkey agar

- Non-lactose fermentation by producing pale yellow colonies.
- The non-lactose fermenters e.g. *Salmonella*, *Shigella* and *Proteus*.



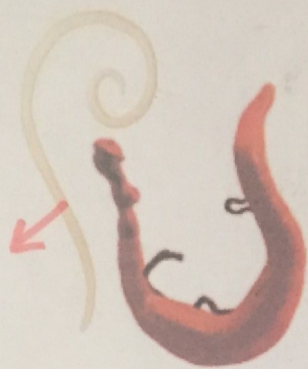
Thiosulphate citrate bile sucrose (TCBS) agar

Composition: It is alkaline agar medium contains thiosulphate, citrate and bile as selective substances. It contains also sucrose as test sugar and bromothymol blue as indicator that give yellow color in acidic pH.

Appearance: It is a green semi-transparent medium.

Uses: It is a selective and indicator medium for the isolation of *Vibrio cholerae*. *Vibrio cholerae* produces yellow colonies due to fermentation of sucrose with acid production.

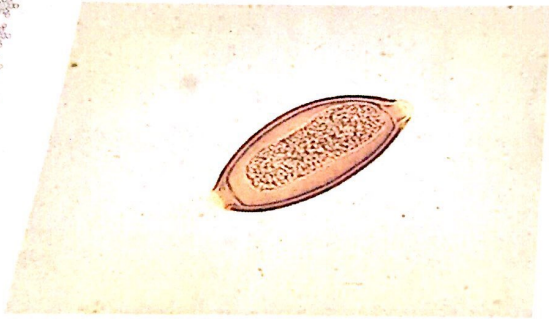




Schistosoma mansoni
Female

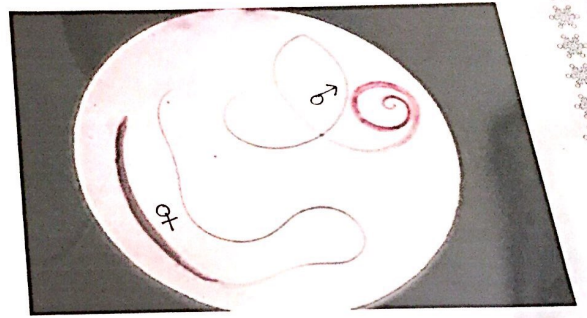


Schistosoma mansoni
Male



Trichuris trichiura

Eggs

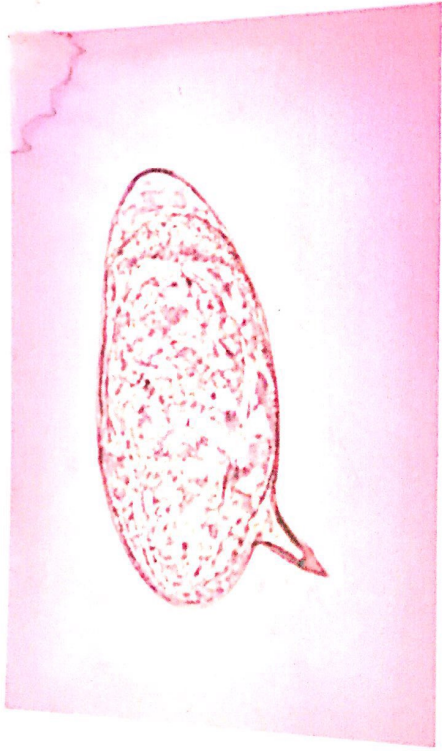


Trichuris trichiura

Female and Male



Vibrio cholerae.



Schistosoma mansoni

Egg