



MANGALORE UNIVERSITY
DEPARTMENT OF BIOCHEMISTRY

MSc in Biochemistry

SOFTCORE BCP 509: EXPERIMENTS IN MICROBIOLOGY & CELL BIOLOGY

PRACTICAL- 3

CREDITS 8 HOURS/WEEK

Course objectives:

- To have hands on experience in microbiological staining techniques
- To know the biochemical tests pertaining to microorganisms.
- Air and water microbiological experiments
- Mounting of polytene chromosomes and also Barr bodies.
- Isolation of nucleus, mitochondria, chloroplast and their purification
- Study of mitosis and meiosis.

Course outcome:

- Student will have a knowledge of all the basic experiments in Microbiology
 - He/she will understand the load of microbes in water and air.
 - Polytene chromosomes and Barr bodies are mounted and identified.
 - Cell organelles and cell divisions are observed
1. Staining techniques (a) Simple staining (b) Gram staining (c) Endo spore staining(d) Capsule staining (e) AFB staining (f) negative staining
 2. Biochemical tests (a) Indole test (b) Methyl red test (c) Voges Proskauer test (d) Citrate utilization test (e) Starch hydrolysis test (f) Gelatin hydrolysis test (g) Catalase test (h) Oxidasetest
 3. Air Microbiology Isolation of air microflora (a) exposure plate method (b) rotorod sampler method.
 4. Water Microbiology: Testing of quality of water (coliform test), H₂S strip method.
 5. Estimation of lactate/ Citrate from bacterial culture media.
 6. Mounting of polytene chromosomes
 7. Mounting of Barr bodies
 8. Study of mitosis by using onion root tips
 9. Study of meiosis
 10. Isolation of nucleus and determination of its purity
 11. Isolation of mitochondria and determination of purity
 12. Isolation of chloroplast by sucrose density gradient and determination of its purity
 13. Visit to Industry/ Institution/Clinical Laboratory.

REFERENCES:

1. Pelczar Jr, M.J. Chan, E.C.S. and Kreig, N.R. (1993). Microbiology, Mc. Graw Hill.Inc.NewYork.
2. Molecular Cell Biology, Lodish, Berk etal.,