

MOHANLAL SUKHADIA UNIVERSITY, UDAIPUR

B. Sc. BIOTECHNOLOGY III YEAR TDC (2016-17)

B. Sc. IIIrd Year Practicals

Practical - I

(A) Microbial Technology

1. Isolation of industrially important microorganisms for microbial processes.
2. To test the production of enzymes: Amylase, proteinases, lipases and celluloses by microorganisms.
3. Demonstration of citric acid production by *Aspergillus niger*, *Penicillium citriarium*.
4. To study industrial production of beer/ wine.
5. Demonstration of production of antibiotics (penicillin) by microbes.
6. To study general methods of food preservation (e.g. Temperature, Salt, Moisture).
7. Testing of milk by MBRT.
8. Turbidity test for milk.
9. Test for pasteurization of milk.
10. Coliform test for milk.
11. Study of alcoholic fermentation- alcohol from different substrates- estimation of percentage of alcohol, total acidity and volatile acidity.
12. Study of food-spoilage microorganisms in fresh, canned, fermented food and meat.
13. Production and analysis of SCP: *Spirulina*, yeast, *Chlorella*, mushroom.
14. Bioassay methods for vitamins and amino acids.
15. Production of yoghurt using specific starter cultures.
16. Demonstration of fermenters.
17. Production of pectinase by *Aspergillus niger* using wheat bran coffee pulp using small scale fermenter and its assay.
18. Production of λ amylase using *Aspergillus oryzae*/ *Bacillus lichenforis* using bran in small scale solid state fermentation and its assay.
19. Production of microbial polysaccharides and yield estimation.

(B) Principles of Recombinant DNA Technology

1. Isolation and purification of plasmid from *Agrobacterium tumefaciens* LBA4404.
2. To perform restriction digestion of plant genomic DNA and its visualization.
3. To perform ligation of insert into the plasmid vector for construction of recombinant plasmid.
4. To check the presence of insert in the recombinant plasmid.
5. Preparation of competent cells of *E. coli* (strain DH5 α) using CaCl_2 treatment.
6. Transformation of *E. coli* (strain DH5 α) by mobilization of plasmid pBsKs into competent *E. coli* cells.
7. Demonstration of presence of GUS gene in plasmid of *Agrobacterium tumefaciens* strain LBA4404.
8. Preparation of protein samples for profiling on polyacrylamide gel.
9. Method of gel casting and sample loading for protein profiling through SDS-PAGE.
10. Running of gel, staining, destaining and analysis of protein profiles using standard protein markers.