e) Write the criteria which make bacteriocin a potent preservative to be used in foods.

f) Write the differences between bacteriocin and therapeutic antibiotic.

g) Classify different types of antimicrobial metabolity produced by starter culture bacteria.

h) Show the purification technique of bacteriocin from the fermented broth (flow chart only).

4+2+1+1+3+3+2+4=20

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MASTER OF TECHNOLOGY (FTBE) EXAMINATION, 2011

(2nd Semester)

ADVANCED FOOD BIOTECHNOLOGY

Time : Three hours Full Marks : 100

Use a separate Answer-Script for each part.

PART – I (60 marks)

Answer ***any three*** questions.

All questions carry equal marks.

1. a) What are vinegar and vinegar stock?

   b) Discuss the commercial production of vinegar with a neat sketch of the bioreactor describing all the steps and parameters in vinegar fermentation.

   c) 'Some metal ions badly affect the quality of vinegar' — discuss. 4+12+4

2. Discuss in detail the commercial production of alpha-amylase by surface culture fermentation method with a flow diagram followed by isolation and purification of the enzyme from mold bran. 10+3+7

3. a) Describe the method of preparation of an Indian social and tribal wine indicating the organisms involved and the region of consumption.

   b) Write down in details the method of preservation of olives by fermentation. 10+10

4. a) Define 'fermented food'. Classify fermented foods with examples (two examples for each category).

   b) 'Fermented foods are nutritions, digestible and safe'—why?

   c) 'Some individuals can not digest milk but can take dahi/ yogurt' — why? 2+9+7+2

5. a) Discuss in detail role of lactic acid bacteria in food preservation and human health.

   b) Answer any ***two*** of the following questions :

      i) Discuss mechanism of action of alpha-amylase and amyloglucosidase in starch hydrolysis.

      ii) Dilute solution of ethyl alcohol is produced by fermentation — why?

      iii) Draw a flow diagram of commercial process for extraction and processing of fruit juice using enzymes.

      iv) Define 'Probiotic'. Name four probiotic organisms.

      12+4+4

PART – II (40 marks)

Answer ***any two*** questions. (2×20)

6. a) Define probiotics.

   b) What are the beneficial effects claimed for probiotic foods?

   c) Mention different forms of probiotics.

   d) State the factors which are important for probiotic culture solution mentioning the names of at least two largely used microbes for this purpose.

   e) What is the principle of action of probiotics? Give examples of commercial application of probiotics.

   f) Give an example of nutraceuticals (other than probiotic or broziotic) mentioning the health benefits claimed.

   2+4+3+5+3+3=20

7. a) Classify different chromatographic techniques used for separation of proteins including enzymes.

   b) Write the principle of affinity separation technique.

   c) Show how can a protein be separated through chemisorption.

   d) Give an application of dye ligand chromatography.

   e) Write the principle of action of hollow-fibre extraction.

   f) Explain with example how precipitation technique may be used in bioseparation. 4+4+3+2+4+3=20

8. a) Explain affinity complexation with example.

   b) Give the dimension range of different types of filtration techniques.

   c) What is the principal advantage of SCFE?

   d) Write the full form of EPA and OSHA.