

[KD 277] APRIL 2001

M.Pharmacy DEGREE EXAMINATION.

(New Regulations)

First Year

Branch III — Pharmacognosy

Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY

Time : Three hours

Maximum : 100 marks

Answer any FOUR questions.

All questions carry equal marks.

1. (a) A private firm is interested in setting up a tissue culture laboratory. Considering yourself as the Head of the Biotechnology research department, write a detailed account on the laboratory requirements for the same.

(b) Write a note on the production of Phytopharmaceuticals through plant tissue culture. (25)

2. (a) Describe the production of one important pharmaceutical preparation by the Fermentation process.

(b) Write a note on 'Plant Serology and Serotaxonomy'. (25)

3. (a) Discuss the functions of secondary metabolites.

(b) Describe the biosynthesis of glycosides. (25)

4. Give a detailed account of the production of dextrose from starch and cellulose substrates. (25)

5. (a) Describe the legal requirements for industrial fermentation.

(b) Write a note on the standardisation of herbal formulations. (25)

6. Write short notes on : (25)

(a) Optical Crystallography

(b) Stability of herbal cosmetics

(c) Spectral study of secondary phytometabolites.

[KD 298] APRIL 2001

M.Pharmacy DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch III — Pharmacognosy

Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY

Time : Three hours

Maximum : 100 marks

Answer ALL the questions.

All questions carry equal marks.

(a) What is Tissue Culture? Describe the principles and media used for Tissue culture. What are the applications of Tissue culture particularly in Pharmacy?

(b) 'Contributions from Plant Genetics have been significant in the improvement of quality of plants'. Justify the statement. (25)

2. (a) What are the factors that influence the formation of Plant Secondary Metabolites?

(b) Explain the various microtechniques available for the identification of crude drugs and their constituents. (25)

3. (a) Describe the importance of Chemotaxonomy.

(b) Describe the principles and uses of MS in characterizing natural products. Illustrate your answer with suitable examples. (25)

4. Write short notes on any FIVE : (25)

(a) Herbal Formulations.

(b) Biotransformation.

(c) Secondary modifications of common metabolites.

(d) Standardisation of Herbal cosmetics.

(e) Yeast.

(f) Commercial production of Vitamin B₁₂.

[KE 277] NOVEMBER 2001

M.Pharm. DEGREE EXAMINATION.

(New Regulations)

First Year

Branch III — Pharmacognosy

**Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY**

Time : Three hours

Maximum : 100 marks

Answer any FOUR questions.

All questions carry equal marks.

1. (a) Discuss on yeast and its role in fermentation technology/industry. (10)
(b) Give a detailed account of production of penicillin by fermentation. (15)
2. (a) Justify the use of plant tissue culture as a medium of study of secondary plant metabolism. (10)
(b) Elaborate on the investigation of biosynthetic pathways by isotopic tracer analysis. (15)

3. (a) Elaborate on cell suspension culture and its role in secondary product/metabolite production. (10)
(b) What are the applications of plant tissue culture in pharmacy? Explain the genetic manipulation of protoplasts. (15)
4. (a) Explain the biosynthetic pathways leading to the formation of DIGITOXIN and TYROSINE. (15)
(b) Write an account on the basic metabolic pathway. (10)
5. (a) Discuss the factors, principles and limitations involved in the standardization of herbal formulations. (15)
(b) Discuss the chemical and spectral analysis of the secondary metabolites. (10)
6. Write detailed notes on the following : (25)
 - (a) Tissue culture media and nutrients.
 - (b) Effluent treatment in fermentation industry.
 - (c) Microchemical analysis.

[KE 298] NOVEMBER 2001

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch III — Pharmacognosy

**Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY**

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

All questions carry equal marks.

1. (a) Discuss the application of HPLC in the separation and HPTLC in the analysis of phytochemicals. (13)

(b) Enumerate the importance of photosynthesis in the production of secondary metabolites. (12)

2. (a) Write about the principle and different steps involved in sequential analysis for elucidating biogenetic pathway with suitable example. (15)

(b) Give details regarding the biogenesis of Alkaloid having indole group. (10)

3. Discuss the importance of genetics for plant improvement. (25)

4. (a) Describe the production of penicillin giving details about the selection of micro organisms and recovery of the antibiotic from the fermented sample. (13)

(b) Discuss the different tests useful in the evaluation of plant extracts. (12)

[KH 298] SEPTEMBER 2002

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch III — Pharmacognosy

**Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY**

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

All questions carry equal marks.

1. Discuss in detail the various methods employed in plant analysis for phytochemicals. (25)
2. Give a detailed account of fermentation technology with examples and applications. (25)
3. Discuss in detail the principles, rationale and the technology involved in the production of herbal cosmetics and their standardisation. (25)

4. Write notes on :

- (a) Role of yeast in the production of single cell proteins (8)
 - (b) Genetic manipulation of protoplasts (8)
 - (c) Polarising microscope. (9)
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[KI 298] **APRIL 2003** Sub. Code : 1010

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch III — Pharmacognosy

Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

All questions carry equal marks.

1. Explain the role of isotopic tracers in biosynthetic pathway analysis. Add note on microbiological conversions. (25)

2. List out different basic metabolic pathways involved in the formation of primary and secondary metabolites. Explain any two of them. (25)

3. Write notes on the following : (5 × 5 = 25)

- (a) Callus culture
- (b) Genetic manipulation
- (c) Mineral supplements in tissue culture
- (d) Cell suspension cultures
- (e) Nutrients in tissue culture.

4. (a) Explain production of penicillin. (12)

(b) Use of Yeast in pharmaceuticals. (13)

OCTOBER 2003

[KJ 298]

Sub. Code : 1010

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch III — Pharmacognosy

**Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY**

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

All questions carry equal marks.

1. Describe the biogenetic pathways leading to secondary metabolites. Write the biosynthetic pathway of Atropine. (25)

2. Discuss on the technology involved in the production of vitamin B₁₂ and dextrose from starch. (13+12)

3. Explain the tissue culture technology and its applications in pharmaceutical industry. (25)

4. Write notes on :

(a) Phytochemical analysis.

(b) Standardisation of herbal formulations.

(c) Applications of UV and NMR spectroscopy in the structures elucidation of natural products. (9 + 8 + 8)

[KK 298] **APRIL 2004** **Sub. Code : 1010**

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch III — Pharmacognosy

Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY

Time : Three hours

Maximum : 100 marks

Sec. A & B : Two hours and

Sec. A & B : 80 marks

Forty minutes

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer ALL questions.

SECTION A — (2 × 15 = 30 marks)

1. Write the general methods of extraction of plant constituents. Describe in detail two separation and isolation techniques used in plant analysis. (15)

2. What is tissue culture? Describe various types of cultures and their applications of pharmacy. (15)

SECTION B — (10 × 5 = 50 marks)

Write short notes on :

3. Write in detail about tracer analysis.

4. How the secondary metabolites help in the study of chemo systematics?

5. Give the applications of UV spectroscopy in the study of natural products.

6. Write a brief note on the standardisation of Herbal drugs.

7. Give the methods of treatment of pharmaceutical effluents.

8. How the ¹H NMR spectroscopy helps in the structural elucidation of Natural Products?

9. Write a note on the preparations of any two Herbal Cosmetics.

10. Describe Shikimic acid pathway.

11. Write the uses of yeast in Pharmacy.

12. Describe various chemical aspects in the production of penicillin.

[KL 298] AUGUST 2004

Sub. Code : 1010

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch III — Pharmacognosy

**Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY**

Time : Three hours

Maximum : 100 marks

Sec. A & B : Two hours and

Sec. A & B : 80 marks

forty minutes

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer ALL questions.

SECTION A

Long Essay :

(2 × 15 = 30)

1. Discuss methods of single cell culture techniques and its application.
2. What are the basic principle involved in the herbal oil extraction? Write the method of isolation of Henna oil and Jasmine oil.

SECTION B

Short notes on :

(10 × 5 = 50)

3. Production of penicillin
 4. Chemical tests of cardiac glycosides
 5. Production of single cell proteins
 6. Application of fermentation process in pharmaceutical industry
 7. Note on secondary product formation by cell suspension
 8. Write the method of extraction of glycosides
 9. Discuss various factors affecting production of secondary metabolites
 10. Explain shikimic acid pathway
 11. Write on HPTLC
 12. Hybridization.
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FEBRUARY 2005
[KM 298] **Sub. Code : 1010**

M.Pharm. DEGREE EXAMINATION.

First Year

(Revised Regulations)

Branch III — Pharmacognosy

**Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY**

Time : Three hours Maximum : 100 marks

Sec. A & B : Two hours and Sec. A & B : 80 marks
forty minutes

M.C.Q. : Twenty minutes M.C.Q. : 20 marks

Answer ALL questions.

SECTION A — (2 × 15 = 30 marks)

Long Essay :

1. Discuss the general methods of extraction, isolation and phytochemical analysis of plant drugs.
2. Write the biosynthetic pathway leading to the formation of ATROPINE and PHENYLANINE.

SECTION B — (10 × 5 = 50 marks)

Write short notes on :

3. Cell suspension cultures.
4. Spectral study of the secondary phytometabolites.
5. Role of light microscope in identification of crude drugs.
6. Phytochemical analysis.
7. Standardisation of herbal formulations.
8. Callus culture.
9. Genetic manipulation.
10. Nutrients in tissue culture.
11. Cell suspension culture.
12. Mineral supplements in tissue culture.

AUGUST 2005

[KN 298]

Sub. Code : 1010

M.Pharm. DEGREE EXAMINATION.

First Year

(Revised Regulations)

Branch III — Pharmacognosy

**Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY**

Time : Three hours

Maximum : 100 marks

**Theory : Two hours and
forty minutes**

Theory : 80 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer ALL questions.

I. Long Essay :

(2 × 15 = 30)

1. Discuss the different methods of biogenetic investigations in detail.
2. What is cellular totipotency? Explain the different factors which controls it.

II. Short notes :

(10 × 5 = 50)

1. Chemical aspects of the production of Ergot alkaloids.
2. Yeast and its use in single cell proteins.
3. Application of fermentation technology in the pharmaceutical industry.
4. Determination of moisture content in crude drugs.
5. Polarising microscope and other microtechniques in the identification of crude drugs.
6. Immuno assays – a tool for the quantitative determination of phytochemicals.
7. Describe biosynthesis of aminoacids.
8. Biosynthesis of isoprenoid compounds.
9. Aromatic biosynthesis.
10. Usefulness of secondary metabolites.

[KO 298] **MARCH 2006** Sub. Code : 1010

M.Pharm. DEGREE EXAMINATION.

First Year

(Revised Regulations)

Branch III — Pharmacognosy

Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY

Time : Three hours Maximum : 100 marks

Theory : Two hours and
forty minutes Theory : 80 marks

M.C.Q. : Twenty minutes M.C.Q. : 20 marks

Answer ALL questions.

I. Long Essay : (2 × 15 = 30)

(1) Discuss the metabolic pathways of photosynthesis and carbohydrate utilization in plants.

(2) Give a detailed account of fermentation technology with examples and applications.

II. Short Notes : (10 × 5 = 50)

- (1) Biogenetic investigations.
 - (2) The shikimic acid pathway.
 - (3) Phytochemical analysis.
 - (4) Cell suspension culture.
 - (5) Usefulness of secondary metabolites.
 - (6) Herbal formulations.
 - (7) Micro techniques in the identification of crude drugs.
 - (8) Genetic manipulation
 - (9) Tracer techniques in biosynthetic pathway.
 - (10) Yeast and its use in the production of single cell proteins.
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SEPTEMBER 2006

[KP 298]

Sub. Code : 2818

M.Pharm. DEGREE EXAMINATION.

First Year

(Revised Regulations)

Branch III – Pharmacognosy

Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY

Time : Three hours

Maximum : 100 marks

Theory : Two hours and
forty minutes

Theory : 80 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer ALL questions.

I. Long essay :

1. (a) Secondary product formation by cell
suspension cultures

(b) Stability and standardisation of herbal
formulations. (10 + 10 = 20)

2. Give a detailed account of fermentation technology
with examples and applications. (15)

3. Discuss in detail plant tissue culture and its
applications in pharmacognosy. (15)

II. Short notes :

(6 × 5 = 30)

1. The shikimic acid pathway

2. Tracer techniques in phytochemical investigations

3. Yeast and its use in single cell proteins

4. Secondary metabolites in chemosystematics

5. Microbiological conversions in higher plants

6. Industrial fermentation and pharmaceutical
effluents its treatment and legal requirements

[KQ 324] MARCH 2007 Sub. Code : 2860

M.Pharm. DEGREE EXAMINATION.

First Year

(Regulation 2006)

Branch III — Pharmacognosy

Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY

Time : Three hours Maximum : 100 marks

Theory : Two hours and Theory : 80 marks
forty minutes

M.C.Q. : Twenty minutes M.C.Q. : 20 marks

Answer ALL questions.

I. Long Essay :

1. (a) Comment upon plant tissue culture as a medium of study of secondary plant metabolism.

(b) Role of Genetics and comparative
Phytochemistry in pharmacognosy. (10 + 10 = 20)

2. Describe the general methods of phytochemical
plant analysis. (15)

3. Comment upon microbiological conversions and
aberrant synthesis in higher plants. (15)

II. Short notes : (6 × 5 = 30)

1. Application of Plant tissue culture is
pharmacognosy.

2. Comment upon laboratory requirements and
general techniques for plant tissue culture.

3. Give a detailed account of fermentation
technology.

4. Treatment of pharmaceutical effluents.

5. Vitamin B₁₂.

6. Secondary metabolites in chemosystematics.

[KQ 298] **MARCH 2007** **Sub. Code : 2818**

M.Pharm. DEGREE EXAMINATION.

First Year

(Revised Regulations)

Branch III — Pharmacognosy

**Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY**

Time : Three hours Maximum : 100 marks

**Theory : Two hours and Theory : 80 marks
forty minutes**

M.C.Q. : Twenty minutes M.C.Q. : 20 marks

Answer ALL questions.

I. Long Essay :

1. How will you investigate the biosynthetic pathways by isotopic tracer analysis? (20)
2. Give the usefulness of genetics on medicinal herbs. (15)
3. Give the applications of HPTLC in herbal industry. (15)

II. Short notes : (6 × 5 = 30)

1. What are the main differences between CC and HPLC?
2. Write some examples of herbal drugs toxicities.
3. How will you preserve crude drugs which absorb moisture during their storage?
4. What do you mean about callus culture?
5. How will you detect the presence of flavonoid in an herbal formulation?
6. Write down the methods used to detect heavy metals in herbal preparation.

SEPTEMBER 2007

[KR 324]

Sub. Code : 2860

M.Pharm. DEGREE EXAMINATION.

Branch III — Pharmacognosy

Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY

Time : Three hours

Maximum : 100 marks

Theory : Two hours and
forty minutes

Theory : 80 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer ALL questions

I. Long Essay :

1. (a) Elaborate on phytochemical plant analysis.
(b) Discuss the role of genetics and comparative phytochemistry in pharmacognosy. (20)
2. Discuss the role of plant tissue culture as a medium of study of secondary plant metabolism. (15)
3. Give a detailed account of fermentation technology with examples. (15)

II. Short notes :

(6 × 5 = 30)

1. Comment upon secondary product formation by cell suspension cultures.
2. Isolation culture and genetic manipulation of plant protoplasts.
3. Industrial fermentation and pharmaceutical effluents – Comment.
4. Ergot alkaloids.
5. Aberrant synthesis in higher plants.
6. Optical crystallography.

September 2008

[KT 324]

Sub. Code : 2860

M.Pharm. DEGREE EXAMINATION.

Branch III — Pharmacognosy

Paper IV — PHYTOCHEMISTRY AND
BIOTECHNOLOGY

Q.P. Code : 262860

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

I. Long Essay : (3 × 20 = 60)

1. What is plant tissue culture? Explain its role in the production of secondary metabolites by different methods with examples.

2. Describe the general methods of extraction and isolation of phytoconstituents.

3. Explain the production of pharmacentrically important substances by microorganisms.

II. Write short notes on : (8 × 5 = 40)

1. Recombinant DNA technology.
 2. Detection of adulterants by U.V. Spectroscopy.
 3. Pharmaceutical effluents – its legal requirements.
 4. Protoplast fusion.
 5. Supervision culture and Batch culture.
 6. Biotransformation.
 7. Role of optical crystallography.
 8. Applications of Infra Red Spectroscopy.
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March 2009

[KU 324]

Sub. Code: 2860

**M.PHARM. DEGREE EXAMINATION
(Regulations 2006)**

Candidates admitted from 2006-2007 onwards

FIRST YEAR

Branch III – PHARMACOGNOSY

Paper IV – PHYTOCHEMISTRY AND BIOTECHNOLOGY

Q.P. Code : 262860

Time : Three hours

Maximum : 100 marks

Answer All questions

I. Essay Questions : (3 x 20 = 60)

1. a) Explain the production of ergot alkaloids by fermentation techniques.
b) Enumerate the importance of genetics in pharmacognosy.
2. a) Describe in detail about fermentation technology with examples and application.
b) What are pharmaceutical effluents? Explain briefly about its treatment and legal requirements.
3. Write in detail about chemical and spectral studies of the constituents of primary and secondary phytometabolites.

II. Write Short Notes : (8 x 5 = 40)

1. Production of dextrose from starch by fermentation.
2. Aberrant synthesis.
3. Callus culture and its applications.
4. The polarizing microscope.
5. Isolation and factors influencing protoplast cultures.
6. Media, nutrients and mineral supplement for tissue cultures.
7. Solid state fermentation.
8. Production of penicillin by fermentation.

September 2009

[KV 324]

Sub. Code: 2860

**M.PHARM. DEGREE EXAMINATION
(Regulations 2006)**

Candidates admitted from 2006-2007 onwards

FIRST YEAR

Branch III – PHARMACOGNOSY

Paper IV – PHYTOCHEMISTRY AND BIOTECHNOLOGY

Q.P. Code : 262860

Time : Three hours

Maximum : 100 marks

Answer All questions

I. Essay Questions : (3 x 20 = 60)

1. Detail the applications of plant tissue culture with examples.
2. Describe the various micro-techniques useful in the identification of plant drugs and their constituents with suitable examples.
3. Discuss the chemical aspects of the production of penicillin and dextrose.

II. Write Short Notes : (8 x 5 = 40)

1. Methods of separation of phytoconstituents.
2. Micro biological conversions.
3. Usefulness of secondary plant metabolites.
4. Applications of fermentation technology.
5. Scope of spectral studies of secondary phyto metabolites.
6. Laboratory requirements for plant tissue culture.
7. Yeast.
8. Utilization of mutation in pharmacognosy.

March 2010

[KW 324]

Sub. Code: 2860

**M.PHARM. DEGREE EXAMINATION
(Regulations 2006)**

Candidates admitted from 2006-2007 onwards

FIRST YEAR

Branch III – PHARMACOGNOSY

Paper IV – PHYTOCHEMISTRY AND BIOTECHNOLOGY

Q.P. Code : 262860

Time : Three hours

Maximum : 100 marks

Answer All questions

I. Essay Questions : (3 x 20 = 60)

1. a) Explain the various general methods of identification of chemical constituents of plants.
b) Write a note on allerant synthesis in higher plants.
2. a) Describe the role of secondary metabolites in chemosystematics.
b) Discuss the usefulness of polarizing microscope in the identification of plant drugs.
3. a) Detail the chemical aspects of the production of ergot alkaloids of microorganisms.
b) What are the legal requirements for the treatment of pharmaceutical industrial effluents?

II. Write Short Notes : (8 x 5 = 40)

1. Tissue culture media.
2. Applications of Hairy root culture.
3. Biotransformation.
4. Applications of UV-Vis spectrophotometer in the study of secondary phytometabolites.
5. Chemical aspects of the production of vitamin B12.
6. Different methods of extraction of phytoconstituents.
7. Optical crystallography.
8. Role of plant tissue culture in the study of secondary plant metabolism.

September 2010

[KX 324]

Sub. Code: 2860

M.PHARM. DEGREE EXAMINATION

(Regulations 2006)

Candidates admitted from 2006-2007 onwards

FIRST YEAR

Branch III – PHARMACOGNOSY

Paper IV – PHYTOCHEMISTRY AND BIOTECHNOLOGY

Q.P. Code : 262860

Time : Three hours

Maximum : 100 marks

Answer All questions

I. Essay Questions :

(3 x 20 = 60)

1. Give a brief account on various micro techniques useful in the identification of crude drugs and their constituents.
2. Write a detailed study and applications of plant tissue culture techniques.
3. Discuss general methods of Isolation and Identification of Phytochemicals from plant materials.

II. Write Short Notes :

(8 x 5 = 40)

1. Solid state fermentation.
2. Microbiological conversions.
3. Surface sterilizing agents.
4. Ergot alkaloids.
5. Biotransformation using plant cell cultures.
6. Callus culture.
7. Yeast.
8. Optimisation of media.

MAY 2011

[KY 324]

Sub. Code: 2860

M.PHARM. DEGREE EXAMINATION

(Regulations 2006)

Candidates admitted from 2006-2007 onwards

FIRST YEAR

BRANCH III – PHARMACOGNOSY

PAPER IV – PHYTOCHEMISTRY AND BIOTECHNOLOGY

Q.P. Code : 262860

Time : Three hours

Maximum : 100 marks

Answer All questions

I. Essay Questions :

(3 x 20 = 60)

1. Discuss the general methods of extraction and isolation phytoconstituents.
2. Write a note on
 - i) Secondary product formation by cell suspension culture (10)
 - ii) Biotransformation (10)
3. Explain in detail about
 - i) Fermenter and its parts with applications (10)
 - ii) Production of Penicillin by fermentation (10)

II. Write Short Notes :

(8 x 5 = 40)

1. Aberrant synthesis in higher plants.
2. Optical crystallography.
3. Production of dextrose from starch.
4. Hairy root culture and its applications.
5. IR spectroscopy in the structural elucidation of phytoconstituents.
6. Nutrients and mineral supplements in tissue culture media.
7. Production of single cell proteins.
8. Secondary metabolites in chemosystematics.
