Course specification
2018- 2019
Faculty of Pharmacy
Mansoura University

المستوى الثالث	توصيف مقرر Phytochemistry-1

University: Mansoura University (MU)
Faculty : Pharmacy
Department : Pharmacognosy
Course title: Phytochemistry-1
Course Code : PG 315

Program on which the course is given	B. Pharm
Academic Level	Third Level, First semester, 2017-2018
Date of course specification approval	10/9/2018

1- Basic Information : Course data :

Course title:	Phytochemistry-1	**Code:**	PG 315
Specialization:	**Pharmaceutical**		
Prerequisite:	Pharmaceutical Organic Chemistry (1)		
Teaching Hours:	**Lecture: 2**	**Practical: 1**	
Number of units: (credit hours)	**3**		

2- Course Aims:

At the end of the course the student should:	
2.1	Gain valuable knowledge about the chemistry of carbohydrates , glycosides, tannins and natural toxins
2.2	Master the different methods of isolation and characterization of naturally occurring compounds as carbohydrates, glycosides, tannins, bitter principles and natural toxins as well as their pharmacological potential.
2.3	Gain understanding of qualitative and quantitative estimation methods of carbohydrates, glycosides and tannins

3-Intended learning outcomes (ILOs):

a- Knowledge and understanding

a1	List the different theories of isolation, purification and characterization of carbohydrates, glycosides, tannins, bitter principles and natural toxins as well as their pharmacological effects.
a2	Recognize the various analytical technique for qualitative and quantitative determination of carbohydrates, glycosides, tannins and bitter principles adapting the suitable laboratory rules

b- Intellectual skills

b1	Discover new methods for the isolation and purification of carbohydrates, glycosides tannins and bitter principles from their natural sources
b2	Design appropriate methods for qualitative and quantitative determination of carbohydrates, glycosides, tannins and bitter principles as natural constituents
b3	Anticipate the physical, chemical and pharmacological characters of carbohydrates, glycosides, tannins, bitter principles and natural toxins.

c- Professional and practical skills

c1	Manipulate the suitable methods for carbohydrates, glycosides and tannins extraction, isolation and purification from their natural origin and assure their rational uses.
c2	Conduct the appropriate method for the carbohydrates, glycosides and tannins qualitative and quantitative determination
c3	Implement the research study on how to purify, analyze and formulate natural products (sp. carbohydrates, glycosides and tannins).

d- General and transferable skills

d1	Work effectively in a team
d2	Demonstrate decision making abilities and time management capabilities
d3	Communicate clearly in written, electronic and oral forms.
d4	Adapt safety guidelines in pharmacy practice

4- Contents:-

Week No	Topics	No. of hours	Lecture/ Credit hr	Practical Credit hr
1.	**Introduction to carbohydrates**	2	2	
2.	Classification, separation , purification, qualitative and quantitative evaluation and medicinal uses of: **monosaccharides**	2	2	
3.	Classification, separation , purification, qualitative and quantitative evaluation and medicinal uses of: **disaccharides**	2	2	
4, 5	Separation , purification, qualitative identification and medicinal uses of homo-polysaccharides, hetero polysaccharides and **polysaccharide** containing amino-sugar units	4	4	
6.	**Introduction to glycosides**	2	2	
7.	**Week 7 Mid-term Exam**			

8	**Phenolic glycosides**: separation, purification, identification, quantitative and quantitative evaluation and their medicinal uses.	2	2	
9	**Phenolic glycosides**: separation, purification, identification, quantitative and quantitative evaluation and their medicinal uses.	2	2	
10	**Phenolic glycosides**: separation, purification, identification, quantitative and quantitative evaluation and their medicinal uses.	2	2	
11.	**Tannins**: Introduction, classification and study of different classes and biological activities And **Natural toxins**	2	2	
12.	**Terpenoid glycosides:** separation, purification, identification, quantitative and quantitative evaluation and their medicinal uses.	2	2	
13	**Bitter principles**	2	2	
14- 18	**Final written & oral Exams**			

Practical Topics

Week No	Topics	No. of hours	Lecture/ Credit hr.	Practical Credit hr.
2	Qualitative identification of carbohydrates (Monosaccharide, Disaccharides)	2		1
3	Qualitative identification of carbohydrates (Polysaccharides)	2		1
4	General scheme for carbohydrate, and unknowns	2		1
5	Carbohydrate Assay; Quantitative estimation of Sugars Assay of glucose (Copper reduction and enzymatic methods)	2		1
6	Carbohydrate Assay; Quantitative estimation of Sugars Assay of glucose and fructose mixture (Copper reduction and iodimertric method)	2		1
7	**Mid-term exam**			
8	Carbohydrate Assay; Quantitative estimation of Sugars Assay of glucose and Sucrose mixture (Direct copper reduction and copper reduction method after hydrolysis) Assay of glucose and maltose mixture	2		1
9	Qualitative identification of glycosides: (Anthraquinones, cyanogen and and Flavonoids)	2		1

10	Qualitative identification of cardiac glycosides, tannins and bitter principles	2		1
11	Preliminary phytochemical screening of unknown drugs	2		1
12	Quantitative estimation of glycosides (Colorimetric estimation of digitalis glycosides by Baljet's reagent)	2		1
13	**Practical Exam**			

5- Teaching and learning Methods:

5.1	**Lectures using whiteboard**
5.2	**Lectures using Data show, PowerPoint presentations**
5.3	**Research assignments**
5.4	**Case study**
5.6	**Discussion session**

6- Student Assessment:

a- Assessment methods:

1. Written exam	**To assess understanding, intellectual and professional skills**
1. Practical exam	**To assess professional and practical skills**
2. Oral	**To assess knowledge, understanding, intellectual skills, general skills and confidence**
3. Case study	**To assess the skills of problem-solving and date presentation**

b- Assessment schedule

Assessment 1	**Practical**	**13thweek**
Assessment 3	**Mid-term**	**7thweek**
Assessment 3	**Oral**	**15thweek**
Assessment 4	**Written**	**15thweek**

c- Weighting of assessments

1	**Mid-term examination**	**10 %**
2	**Final-term examination**	**50 %**
3	**Oral examination**	**15 %**
4	**Practical examination & Semester work**	**25 %**
Total		**100%**

7 - List of References

N0.	Reference	type
1	Evans, W.C "Trease and Evans". "Pharmacognosy" 15th edition, 2002	Book
2	Torssell B. G "Natural Product Chemistry, A Mechanistic, Biosynthetic and Ecological Approach", 1999	Book
3	Dewick P. M."Medicinal Natural Products, a Biosynthetic Approach", 3rd edition John Wiley & sons, 2009	Book
4	Lectures notes prepared by staff members	Course notes

7- Matrix of knowledge and skills of the course

No	Course contents	Study Week	ILOS			
			Knowledge & understanding	Intellectual skills	Professional and practical skills	General & transferable skills
1.	**Introduction to carbohydrates**	1st	a2	b2	-	-
2.	Classification, separation , purification, qualitative and quantitative evaluation and medicinal uses of: **monosaccharides, disaccharides, homopolysaccharides, hetero polysaccharides and polysaccharide** containing amino-sugar units	2nd - and 5th	a1, a2	b1, b2, b3	c2, c3	d2, d3
3.	**Introduction to glycosides**	6th	a2	b2	-	-
4.	**Phenolic glycosides**: separation, purification, identification, quantitative and quantitative evaluation and their medicinal uses.	8th - 10th	a1, a2	b1, b2, b3	c2, c3	d2, d3
5.	**Tannins**: Introduction, classification and study of different classes and biological activities	11th	a1, a2	b2, b3	c3	d2, d3
6.	**Natural toxins**	11th	a1	b2, b3	c1, c2	d2, d3
7.	**Terpenoid glycosides:** separation, purification, identification, quantitative and quantitative evaluation and their medicinal uses.	12th	a1, a2	b1, b2, b3	c3	d2, d3

8.	**Bitter principles**	13th	a1, a2	b1, b2, b3	c3	d2
9.	**The practical topics**	2nd - 5th and 7th - 13th	a1, a2	b2	c1, c2	d1, d2, d3, d4

Course Coordinator :	**Prof. Dr. Ahmed M. Zaghloul**
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