**Ministry of Higher Education & Scientific Research**

**University of Baghdad – College of Pharmacy**

**Department of Pharmacognosy**

**Self-Assessment Report**

**Department of Pharmacognosy**

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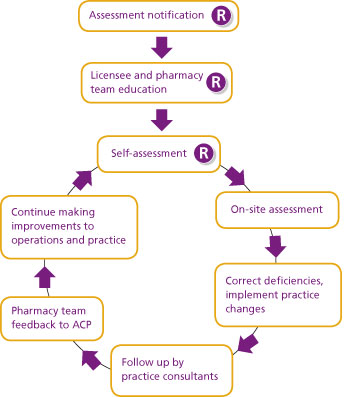
PREFACE

The present report is the first self-assessment report written for the Department of Pharmacognosy at the College of Pharmacy - University of Baghdad over the date. The report represents the first step towards achieving Quality Assurance in accordance with international standards, which is a strategic and important decision for the scientific and educational process of the department in the College of Pharmacy. In writing the report, we have rely mainly on the template of a self-assessment report issued by the UNESCO Iraq Office (Amman), in addition to a number of similar reports of a number of Arab and international universities that have already presented such a report. The report includes a definitive introduction to the department and its history, scientific disciplines and awarded degrees, the system of study and curriculum, organizational structure, the general features of the policy of the department in the various fields and aspects

Pharmacy Assessment

About pharmacy assessments

The purpose of the assessment is to help elevate pharmacist practice in order to meet and/or exceed the minimum standards to improve patient care and ensure patient safety. The assessments are conducted in a way that facilitates discussion between the teachers and students in order to correct their deficiencies, and to ask questions to better understand and apply the standards and regulations that pertain to pharmacy practice and operations. After the assessment we recognize that change can be difficult and that we may require clarification about the correction of deficiencies or need help implementing certain recommendations.



R symbolizes a routine assessment. Though the first three steps containing this symbol occur for this type of assessment only, the college strongly encourages ongoing team education for the advancement and continuous quality improvement of pharmacy practice.

1. INTRODUCTION

Pharmacognosy is the oldest of all pharmacy sciences, the name “Pharmacognosy “derived from the Greek Pharmacon, a drug, and gignosco, acquire knowledge(the entire meaning of drugs , It is the science of biogenic or nature-derived pharmaceuticals and poisons

Pharmacognosy is related to both botany and plant chemistry “Phytochemistry “, and its history entitles it to be regarded as parent of both

:

Pharmacognosy is one of the important branches of pharmacy. It deals with the study of structural, physical, chemical and sensory characters of crude drugs and includes their history, cultivation, collection, storage and use, as well as the search for new drugs from natural sources.

**1.1-Value of natural products**

Compounds from natural sources play four significant roles in modern medicine:

* They provide a number of extremely useful drugs that are difficult, if not impossible, to produce commercially by synthetic means
* Natural sources also supply basic compounds that may be modified slightly to render them more effective or less toxic
* Their utility as prototypes or models for synthetic drugs possessing physiologic activities similar to the originals
* Some natural products contain compounds that demonstrate little or no activity themselves but which can be modified by chemical or biological methods to produce potent drugs not easily obtained by other methods

Baccatin III Taxol

**1.2-Function of Pharmacognosist**

* Identification of the drug sources
* Determination of the morphological character
* Investigation of potency, purity, and admixture
* Planning and designing of the cultivation of medicinal plants
* History, Definitions and Scope of Pharmacognosy
* Prescription of the detail processes of collection, drying and preservation
* Knowledge about active constituents, chemical nature and uses

**2. SCOPE (APPLICATIONS) OF PHARMACOGNOSY**

Pharmacognosy has vast applications in the Pharmaceutical Industry and therapeutics. Some of the basic applications of Pharmacognosy are listed below;

•The most important application of Pharmacognosy includes the thorough knowledge on the history, cultivation, collection, standardization, transfer and storage of drugs and economic substances affecting the health of man and other animals.

•The drug-drug, drug-food interactions are studied in Pharmacognosy which help us avoid the untoward effects of severe interactions and hence help in obtaining the optimal therapeutic outcomes. The most sensitive classes of drugs include, the following;

Blood thinners

Protease inhibitors

Cardiac Glycosides

Imuuno Suppressant Cyclosporine

•Bioassay Guided Fractionation technique helps in the extraction of the crude substance from the natural sources on the basis of their physiochemical activities as well as the biochemical activity. The extraction of medicines from various plants and parts of plants and its utilization has revolutionized the health sciences.

•World Health Organization has estimated that the 80% of the total world population uses the herbal medicines. Some of the common botanical sources of drugs include the following;

Bitter Gourd (product used for lowering blood pressure)

St John's Wort (product used to cure depression problems

Garlic (extract which is used for lowering cholesterol level in blood and also used for the regulation of blood pressure)

Ginger (used for the cure of throat problems and also used as carminative)

Gingko Biloba (the product from it is used to cure Alzheimer’s disease)

Kava Kava (Extracts used for the treatment of anxiety

•In the pharmaceutical industry, various drugs of botanical origin are used in drug manufacture process including the following;

Opium (anesthetic, analgesic) obtained from *Papaver sominerum*

Aspirin (antipyretic, anti-inflammatory, analgesic) obtained from *Spiraea* plant Digitalis (Cardiac Glycosides Digoxin, Digitoxin) obtained from *Digitalis purpurea*

Quinine (Anti-Malarial) obtained from *Cinchona* bark

Other examples include, Chromone Glycosides, Cynogenic Glycosides, Flavonoid Glycosides, Phenolic Glycosides, Saponins, Steviol Glycosides and Thioglycosides which have very important therapeutic effects.

•The revolution of herbal medicine has increased the demand forresearch in the field of Pharmacognosy. It includes;

Quality Control to assure the Identity, purity and consistency of drug substances

Efficacy to determine the therapeutically effects, indications, clinical aspects and pharmacological effects)

Safety research to study, the untoward toxic reactions, interactions, contraindications, precautions

3. PHYTOCHEMISTRY & MODERN ASPECTS

* The word ‘phyto’ derives from the Greek word plant. The biochemical study of plants; concerned with the identification, biosynthesis, and metabolism of chemical constituents of plants; especially used in regard to natural products.
* Use of modern isolation techniques and pharmacological testing procedures
* Cultivation or artificial propagation by cell culture
* Microbial biotransformation

4. SUBJECTS OF PHARMACOGNOSY

**4.1- Pharmacognosy I**

The course consists of basic principles of pharmacognosy, including introduction and definitions, scope of pharmacognosy, historical review, and classification of crude drugs. The course also includes the cultivation, collection and processing of medicinal plants. Plant cell and tissue types are covered, in addition to ergastic cell contents and their importance. Also includes the morphology and anatomy of different plant organs

Objectives of the course

To enable the student to:

• Acquire knowledge about the modern concept and scope of Pharmacognosy.

• Understand the botanical aspects, nomenclature, and classification of crude drugs

• Have general information on cultivation, collection and processing of medicinal plants.

• Know the different types of plant tissues.

• Acquire knowledge about ergastic cell contents and their importance as well as dusting powders.

• Know the active constituents of medicinal plants and identify the major groups by chemical testing.

• Acquire knowledge about taxonomy of medicinal plants and medicinal plant families

• Describe the morphology and anatomy of different plant organs

4.1.1- **Syllabus of Pharmacognosy I theory:**

|  |  |
| --- | --- |
| **No** | **Lecture title** |
| 1 | General Introduction: The Scope of Pharmacognosy, definitions and basic principles. |
| 2 | Drugs from natural sources, crud drugs, official and non-official drugs. |
| 3 | Classification of natural products. |
| 4 | Plant nomenclature and taxonomy. |
| 5 | Production of crude drugs: Cultivation, collection, drying and storage. |
| 6 | Deterioration of crude natural products. |
| 7 | Chemistry of natural drug products. |
| 8 | Quality control: Evaluation of natural products; macroscopical evaluation; physical evaluation; chemical evaluation; biological evaluation; spectroscopical evaluation. |
| 9 | Phytochemical investigation of herbal products: Extraction of the plant material; Separation and isolation of constituents; characterization of the isolated compounds. |
| 10 | Separation technique: Introduction; Mechanisms of separation and classification based on the type of technique; paper chromatography; Thin layer chromatography; Ion-exchange chromatography; Gel filtration chromatography; Column chromatography; Gas chromatography; HPLC; Electrophoresis; Affinity chromatography. |
|
| 11 | Traditional plant medicines as a source of new drugs. Bioassay-guided fractionation |
| 12 | Tissue culture of medicinal plant: Introduction and history; laboratory of the plant tissue culture; aseptic techniques Application of the plant tissue culture; environmental and biological control; plant growth regulators. |

**4.1.2- Syllabus of Pharmacognosy I practical:**

|  |  |
| --- | --- |
| Lecture title | No |
| Micro-measurement and magnification | 1 |
| Microscopical identification of crude drugs and cell contents | 2 |
| Extraction and separation techniques | 3 |
| Chromatography | 4 |
| Paper chromatography | 5 |
| Introduction to thin-layer chromatography | 6 |
| TLC on microscope slides | 7 |
| Partition chromatography for the separation of volatile oils | 8 |
| Effect of activity of adsorbents on Rf values | 9 |

**4.2- Pharmacognosy II**

Objectives of this course

To enable the student to:

Biosynthetic pathway of the secondary metabolites: Acquire knowledge about:

(Glycosides, volatiles oils, fixed oils, resin, tannins and waxes). At the end of this course students must acquire a good knowledge about the chromatographic methods of detection of active constituents of medicinal plants and their biosynthetic pathways. He must be able to recognize the different natural sources of these active constituents, their pharmacological actions and therapeutic uses.)

**4.2.1- Syllabus of Pharmacognosy II theory:**

|  |  |
| --- | --- |
| **Lecture title** | **No** |
| Introduction : general biosynthesis pathway of secondary metabolites | 1 |
| Carbohydrates | 2 |
| Volatile oils : introduction, chemistry , chemical classification & biosynthetic pathway | 3 |
| Glycosides: : introduction, chemistry , chemical classification & biosynthetic pathway | 4 |
| Resins and resin combination; tannins | 5 |
| Lipids: fixed oils and waxes | 6 |

**4.2.2- Syllabus of Pharmacognosy II practical**

|  |  |
| --- | --- |
| **Lecture title** | **No** |
| Extraction and Identification of cardio-active glycosides | 1 |
| Extraction and Identification of anthraquinone glycosides | 2 |
| Extraction and Identification of saponin glycosides | 3 |
| Extraction and Identification of tannins glycosides | 4 |
| Isolation of flavonoids from *Ruta graveolens* | 5 |
| Isolation of hesperidin from citrus rind | 6 |
| Isolation of khellin | 7 |

**4.3- Pharmacognosy III**

Objectives of this course this course is intended to study chemistry of other natural products namely alkaloids and antibiotics. Also this course includes studying the principle of phytotherapy and the most important medicinal plants in the selected health care systems.

**4.3.1- Syllabus of Pharmacognosy III theory:**

|  |  |
| --- | --- |
| No | Lecture title |
| 1 | Alkaloids: introduction, physical & chemical properties |
| 2 | Chemical classification of alkaloids ( pyridine, piperidine, tropane, quinoline & isoquinoline, imidazole, purine, indole alkaloids, alkaloidal amines |
| 3 | Antibiotics: natural sources, biosynthetic pathways, isolation and purification |
| 4 | Phytotherapy: Introduction, principles, medicinal plants in the selected health care systems. Important natural products & phyto-medicines used in pharmacy . |

**4.3.2- Syllabus of Pharmacognosy III practical:**

|  |  |
| --- | --- |
| No | Lecture title |
| 1 | Tests for alkaloids |
| 2 | Isolation of piperine from black pepper |
| 3 | Isolation of tropane alkaloids from *Datura stramonium* |
| 4 | Isolation of alkaloids from *Peganum harmala* |
| 5 | Isolation of caffeine from tea and coffee |
| 6 | Isolation of alkaloids from *Fumaria densiflora* |

**4.4- Higher Graduate Studies in Pharmacognosy**

PROGRAM OUTLINE

The Department of Pharmacognosy offers studies leading to degrees in Pharmacognosy at both the masters and doctoral levels. Major research areas concern the isolation, structure elucidation, bioassay and mechanism of action of plant constituents having biological activity. Studies in biomolecular interactions and structural biology are also pursued. Individual faculty profiles should be consulted for their specific areas of research interest

**Interdepartmental: Pharmacy, M.S, Ph.D**

Responsibility and Implementation Process:

Responsibility for all graduate programs in the College of Pharmacy is based on a balance between the autonomy of individual faculty members in supervising their graduate students and the responsibility of the entire College graduate faculty for ensuring the quality of our graduate programs. There is a single M.S. degree in pharmacy, with sub-specialties in each of the areas represented by the current Division structure of the College

 Medicinal Chemistry

 Pharmaceutics

 Pharmacology & Toxicology

 Pharmacotherapy & Pharmacognosy

 Pharmacy Administration

 Pharmacy Practice

Oversight responsibility for the M.S. & Ph.D programs rests globally with the Associate Dean for Research and Graduate Studies, who reports directly to the Dean of the College. The Associate Dean works directly with the Graduate Coordinator for daily management of the programs. Within each Division, Graduate Advisors assist students with coursework and progression toward the anticipated degree. Division Heads manage each of the programs cited above, and the Administrative Sub-Committee (Division Graduate Advisors, chaired by the Associate Dean) provides governance and quality assurance. The Graduate Faculty relies on each Division to ensure that its graduate students have the requisite academic background for the discipline and demonstrate mastery through satisfactory completion of required courses. The Graduate Faculty also relies on the thesis committee members to ensure quality in graduate research, thesis formulation, and thesis defense.

Program Educational Objectives) (PEOs) :)

The program educational objectives for the M.S. programs in pharmacy (in Pharmacognosy department) are designed to prepare graduates to enter research-oriented or advanced practice careers. M.S. & Ph.D graduates will be prepared to demonstrate:

 An appropriate level of knowledge of their discipline and sub-discipline (including understanding of the current state of the discipline, modern experimental techniques characteristic of the discipline, and research challenges in the area)

 An ability to conduct research in the discipline (formulation of the research problem/hypothesis, experimental design and execution, data analysis, and interpretation)

 The ability to discriminate quality scholarship in the discipline and the ability to communicate their scholarship both written and verbal communication of results))

An understanding of appropriate sources of funding for the discipline

 The ability to communicate with colleagues in related disciplines

 A high level of professional ethics in their disciplinary community and a strong desire to improve the health and welfare of society through their research contributions

 Ability to provide a leadership role for careers in industry, government, and/or academics.

 An ethic for life-long learning in their discipline

The following table relates the program outcomes and assessment methods

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Program Outcome | | | | Assessment Method |
| Scholarly Writing Skills | Oral Communication Skills | Conducting and Reporting Independent Research | Disciplinary Expertise |
|  |  |  | x | Completion of Core Curriculum |
| X |  | x |  | Thesis Proposal |
| X |  | x |  | Thesis |
|  | x | x |  | Thesis Defense |

**5. VISION AND MISSION OF PHARMACOGNOSY DEPARTMENT IN THE COLLEGE OF PHARMACY**

Pharmacognosy department in the College of Pharmacy will lead the way toward effective global health care by: developing innovative teaching practices, advancing research and practice, and merging true entrepreneurial spirit with care and compassion. The courses delivered from our department for the underground levels include Botany and Medicinal Plants, General Pharmacognosy, Chemistry of Natural Products (Phytochemistry), Herbal Medicine as well as advanced elective courses. The course of Botany and Medicinal Plants is designed to be prerequisite course to both Pharmacognosy and Phytochemistry. While General Pharmacognoy courses deal with the identification of drugs from natural origin either in its entire or powdered forms.

The courses of Phytochemistry (chemistry of natural products) are also designed to deal with different classes of secondary metabolites. These courses are designed to be prerequisite to the course of Herbal Medicine which provides pharmacy student's with necessary knowledge to be capable of solving any problem of herbal drug analysis.

Pharmacognosy department fosters a learning-centered, research-oriented educational environment that encourages individuals to make positive life-long contributions to global health. We prepare professional degree students to provide compassionate pharmacist-delivered patient care, and inspire our students through innovative problem-based learning, rich experiential curricula and inter-professional collaboration. We foster a community of scholars who will further the body of knowledge in pharmaceutical, biomedical, and clinical sciences. We strive to improve quality of life: locally, nationally and globally

* •Service to the local, national and global community
* •Integrity and ethical behavior
* •Innovation and collaboration in research
* •Professional practice & education
* •Personal growth through life-long learning
* •Diversity and respect for all individuals
* •Cultural competence

The Department of Pharmacognosy has a distinctive role in the essential field of drug research and carries out studies on the physical, chemical, biochemical and biological properties of drugs and drug substances of natural origin. We focus on to be distinctive department locally, nationally & internationally, as a part of a high-level faculty. We offer high-quality education to cultivate and prepare outstanding skilled pharmacists. We aim to reach a leading position in research in the field of natural products. The Department of Pharmacognosy is completely dedicated to provide excellence in education and research in the disciplines of pharmacognosy & natural products chemistry to define the direction & scope of herbal drug therapy through continuous & innovative research

Pharmacognosy department in the College of Pharmacy Goals focus on the following areas: Academic Quality, Collaborative and Experiential Learning, Global Research Excellence, Faculty Development, Diversity/Inclusion, and Institutional effectiveness

**1. Academic Quality**

* To expand high quality academics and support systems to ensure the success of our PharmD and BSPS students.
* Excellence in Graduate Education: Continue improving the quality and relevance of our graduate programs.

**2. Collaborative and Experiential Learning**

* Promote active, collaborative and experiential learning that prepares students for a rapidly changing health care environment

**3. Global Research Excellence**

* Transform our research program to become a global center of excellence in strategically identified areas, resulting in influencing the course of research throughout the University .

**4. Faculty Development**

* Support faculty development and training so that the College will continue its success in teaching, scholarship, outreach, and professional service.

**5. Diversity/Inclusion**

* Foster a strong diverse community, which expects caring, integrity and respect between all students, faculty and staff in the College

**6. Institutional Effectiveness**

* Culture of Excellence: Ensure a culture of excellence by purposeful development and support of highly skilled, diverse Staff who are empowered, valued and appreciated.
* Operations & Communications (All Stakeholders): The College will operate and communicate in a collaborative, effective and transparent manner with all stakeholders.

What is the importance of teaching Pharmacognosy to pharmacy students?

Pharmacognosy as a course should be one of the fundamental contents of Pharmacy curriculum in view of its meaning and the content of the course. Some of the orthodox medicines currently in use for the prevention and treatment of diseases originate from plants or animals. For example digoxin, a glycoside used in congestive heart failure is from leaves of Digitalis lanata. Quinine, an antimalarial and quinidine an antiarrythmia are alkaloids found in cinchona bark. Currently, the need of the populace for health and dietary adequacy has resulted in the use of Nutraceutical supplement either as complementary or alternatives without regards to issues of medicine dose, duration, frequency, route of administration adverse drug reactions, drug-drug, drug-food, drug-disease and drug-physiological state interactions .

Pharmacy students should be equipped with the necessary skills needed for them to discharge their responsibilities as experts on drug and drug-related issues on graduation. Hence the teaching of pharmacognosy to pharmacy students is very important, Pharmacognosy is not a subject of the past, but it has evolved and developed over the years to adapt itself with the changing environment, and is now fit to meet the challenges of the present and the future of drug discovery and development. Thus, the importance of Pharmacognosy in Pharmacy cannot be overemphasized. Pharmacognosy will remain to be a significant and an essential contributor to the knowledge and understanding of drugs and therapies, and thus should be an integral part of any meaningful academic Pharmacy programs world over.

6. CURRICULUM \ OVERVIEW

The Lessons in the Pharmacognosy department are designed to provide practical, hands-on experience with each assignment designed to enrich our personal experience with the plant world

Each lesson Provides

* •Directions and recipes on making herbal preparations
* •A list of herbs to research
* •Projects such as making an herbal first aid kit, designing an herb garden, or making our own herbarium and plant press

**Course Overview and Curriculum**

**Lesson one Curriculum**

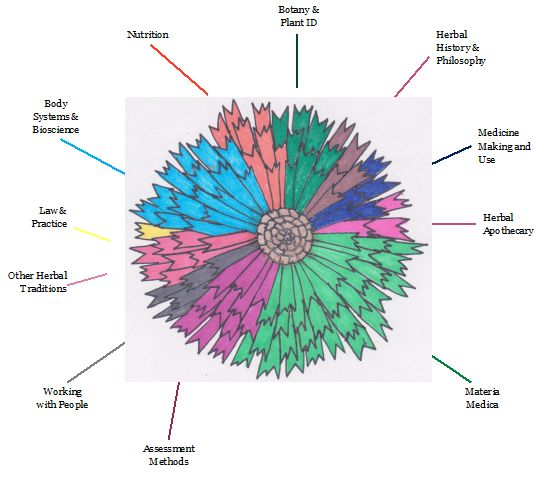
* **Introduction to Herb identification**
* **How to determine good quality herbs.**
* **Where to get herbs/herbal products.**
* **Herbs and allopathic medicine.**
* **Wild plant identification.**
* **The fine art of drying, harvesting, and storing herbs.**
* **Herbal preparation: decoctions/infusions.**
* **Separation and identification of active constituents from herbs by chromatography**
* **The importance and aspect of Plant Tissue Culture**

Lesson Two Curriculum

* **Herbal Medicine Show**
* **Herbal therapeutics**
* **The medicinal action of alterative**
* **Biosynthetic pathways of all herbal active products inside plants to ensure the synthesis of these active drugs inside the laboratory and modifying the basic structure to increase therapeutic effects and decrease toxic effects**
* **The importance and aspect of Phytotherapy:**

**Herbal** **treatments for different disease: liver imbalances, skin problems, allergy, urinary disease, respiratory disease and others**

School of Pharmacognosy and Medicinal plants

****The American Society of Pharmacognosy defines Pharmacognosy as “the study of the physical, chemical, biochemical and biological properties of drugs, drug substances, or potential drugs or drug substances of natural origin as well as the search for new drugs from natural sources.” Modern Pharmacognosy involves the broad study of natural products from various sources including plants, bacteria, fungi, and marine organisms. Pharmacognosy has always been a translational or multidisciplinary science, and during the evolution of the scope of this subject area, phytochemistry and phytochemical analysis have become integral parts of Pharmacognosy. Molecular biology has become essential to medicinal plant drug discovery through the determination and implementation of appropriate screening assays directed toward physiologically relevant molecular targets, and modern Pharmacognosy also encapsulates all these relevant new areas into a distinct interdisciplinary science. The emphasis and focus of research in Pharmacognosy have changed significantly, from focusing on identification of drugs, including the isolation of active principles, and more recently, the investigation of biological activity. Research into ethnobotany, ethnomedicine, and ethnopharmacology has also become an important element in Pharmacognosy.

Pharmacognosy has played a pivotal role in the discovery and development of new drugs and therapies, and has been continuing to do so even today. It also formed the basis of the development of the subject “Pharmacy.” However, it is rather unfortunate that Pharmacognosy is somewhat neglected nowadays as a major subject area within the modern Pharmacy curricula. For the sake of new hypes of modern medicine, one should not forget the usefulness traditional medicines based on plants. It has never been more important for any modern pharmacist to have proper knowledge about traditional medicines.

While the word Pharmacognosy may not be that visible in the Pharmacy curricula in the UK and USA, some of its contents are still present in various forms and names, e.g., drug discovery from natural products/medicinal plants, herbal therapy, phytotherapy, natural medicines, and phytopharmaceuticals. Despite all odds, the popularity and applications of Pharmacognosy are ever increasing in countries like Brazil, China, and India, the emerging giant economies where Pharmacognosy research has gained new momentum because of its proven potential in contributing billions of dollars to their economy. Historically, natural products discovered from medicinal plants and their derivatives have provided numerous clinically useful medicines. Despite the challenges facing drug discovery from medicinal plants, natural products isolated from medicinal plants will remain an essential component in the search for new drug candidates. Many researches in drug discovery from medicinal plants involve a multifaceted approach combining botanical, computational, phytochemical, biological, and molecular techniques. It is evident that drug discovery from medicinal plants continues to provide new and important leads against various pharmacological targets including cancer, HIV/AIDS, Alzheimer's, malaria, and pain. Several natural product drugs of plant origin have either recently been introduced or are currently involved in late-phase clinical trials.

Whether we like it or not, Pharmacognosy is not a subject of the past, but it has evolved and developed over the years to adapt itself with the changing environment, and is now fit to meet the challenges of the present and the future of drug discovery and development. Thus, the importance of Pharmacognosy in Pharmacy cannot be overemphasized. Pharmacognosy will remain to be a significant and an essential contributor to the knowledge and understanding of drugs and therapies, and thus should be an integral part of any meaningful academic Pharmacy programs world over.

**Opinion of Students**

During the period of the academic year, the student is required to meet with a faculty members and to review his/her progress

For the development of the educational process at the university, we hope to express your opinion by answering accurately with mark √ in the place which reflects your opinion taking into consideration the accuracy and objectivity

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| I Don’t Agree At All | Disagree | I Don’t Know | Agree | Strongly Agree | Question | NO |
|  |  |  |  |  | **The content of article commensurate with the objective of Curriculum** | **1.** |
|  |  |  |  |  | **Subject content is an interdependent information** | **2.** |
|  |  |  |  |  | **Lecture time is sufficient to cover the contents of the article** | **3.** |
|  |  |  |  |  | **Textbooks and references are available and meaningful** | **4.** |
|  |  |  |  |  | **Contents of the book are of outdated information** | **5.** |
|  |  |  |  |  | **Is the syllabus in direct connect with our job as a pharmacist** | **6.** |
|  |  |  |  |  | **Exams reflect the content of the subject** | **7.** |
|  |  |  |  |  | **Examinations and assignments helped to absorb the subject** | **8.** |
|  |  |  |  |  | **Examinations and exercises are in line with the objectives of the subject** | **9.** |
|  |  |  |  |  | **Examinations and exercises help to think of more conservation** | **10.** |
|  |  |  |  |  | **Number of exams and the their recurrence are appropriate** | **11.** |
|  |  |  |  |  | **The case of equipped lecture halls satisfactory** | **12.** |
|  |  |  |  |  | **Capabilities and laboratories are appropriate and effective** | **13.** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| I Don’t Agree At All | Disagree | I Don’t Know | Agree | Strongly Agree | Question | NO |
| 10 | 10 | 10 | 60 | 20 | **The content of article commensurate with the objective of Curriculum** | **1.** |
| 10 | 20 | 30 | 50 | 10 | **Subject content is an interdependent information** | **2.** |
| 10 | 20 | 20 | 20 | 40 | **Lecture time is sufficient to cover the contents of the article** | **3.** |
| 30 | 30 | 20 | 20 | 10 | **Textbooks and references are available and meaningful** | **4.** |
| 10 | 20 | 40 | 30 | 10 | **Contents of the book are of outdated information** | **5.** |
| 20 | 40 | 10 | 20 | 20 | **Is the syllabus in direct connect with our job as a pharmacist** | **6.** |
| 10 | 70 | 10 | 10 | 10 | **Exams reflect the content of the subject** | **7.** |
| 20 | 50 | 20 | 10 | 10 | **Examinations and assignments helped to absorb the subject** | **8.** |
| 20 | 10 | 50 | 20 | 10 | **Examinations and exercises are in line with the objectives of the subject** | **9.** |
| 10 | 10 | 30 | 50 | 10 | **Examinations and exercises help to think of more conservation** | **10.** |
| 50 | 10 | 10 | 30 | 10 | **Number of exams and the their recurrence are appropriate** | **11.** |
| 10 | 30 | 40 | 20 | 10 | **The case of equipped lecture halls satisfactory** | **12.** |
| 10 | 40 | 10 | 40 | 10 | **Capabilities and laboratories are appropriate and effective** | **13.** |

From the above results we can conclude that there is agreement about the contents of our subjects but there are many points especially about the numbers of exams during the courses so the opinion of students is:

A new examination system must be introduced for pharmacists and other healthcare practitioners in a clinical setting to assess how they would perform in a real-life situation.   
  
The Objective Structured Clinical Examination (OBSE) would be made mandatory for all licensed pharmacists in the college.   
  
This is part of a plan to upgrade the skills of pharmacists, who will play a bigger role with implementation of the national health insurance scheme.   
  
“Currently the role of pharmacists is limited to dispensing medicines. In future, they will be getting a bigger role including the right to prescribe some medicines in certain situations. The new examination system is to assess if they are equipped with the required skills.   
  
“We are in the process of developing the models for implementing the examination.   
  
The examinees will be required to deal with different situations. For instance, a patient may have a complicated prescription or medical condition that will require great skills and knowledge while dispensing the medicines. To conduct the examination, we should first develop the models and find people who are ready to act as patients,” also capabilities and laboratories must be more appropriate and effective, also many visits to herbalism (example: National Iraqi Herbarium, Botany Directorate at Abu-Ghraib) are required from students to give a clear idea about the most important medicinal plant indigenous and cultivated in Iraq.

**Student Advising**

Freshman advising is handled by the Committee of Student Affairs in the Department of Pharmacognosy. The Committee consisting of some members of the faculty is responsible for advising students. The faculty advises, motivates, and helps students with their professional development. There are occasions in which faculty members spend time with students outside the classroom on special projects and in undergraduate research activities. Students’ advising is provided by all faculty members based on expertise and guidance as preferred by the student.

**SWOT Analysis**

**SWOT Analysis**

Figure-1 shows the SWOT analysis for the students of the department

|  |  |  |  |
| --- | --- | --- | --- |
| |  | | --- | | **Weaknesses (Internal)** | | |  | | --- | | **Strengths (Internal)** | |
| |  | | --- | | 1. Deficiencies in certain outcomes in graduating students.  a. Communication skills.  b. Design / real world applications.  c. number of examination  2. Quality and quantity of current students.  a. The lack of motivation to excel.  b. The culture of being “spoon-fed”.  c. Inadequate language preparation.  d. Inadequate training in critical or analytical thinking. | | |  | | --- | | 1. A very good experience in academic education for a good number of the faculty members.  2. A very good number of young and dynamic faculty members.  3. Sufficient number of faculty members.  4. The long and rich history, as well as the good reputation of the department.  5. Good relationships between employees and students of the department | |
| |  | | --- | | **THREATS (EXTERNAL)** | | |  | | --- | | **OPPORTINITIES (EXTERNAL)** | |
| |  |  | | --- | --- | | 1. Start the establishment of private universities in neighboring countries and the opening of branches in Iraq.   |  | | --- | | e. Weaknesses in general level of scientific awareness of society.  2. Declining interest in Pharmacognosy  a. Lack of sufficient number of quality students with strong interest in Pharmacognosy  3. Quality of incoming students (language, analytical thinking, motivation). | | | |  |  | | --- | --- | | 1. New trends in multi-disciplinary professional education and new teaching methods.   |  | | --- | | 2. High proportion of demand for higher education in Iraq.  3. The presence of government financial support for official universities  4. Developing good relationships with alumni.  5. Interdisciplinary teaching.  6. Good opportunities for investment in Iraq | | |

**Interactions with Students**

At Pharmacognosy Department, quality teaching and student interactions are emphasized. All faculty members maintain regular posted office hours, and most have an open-door policy; supervise senior design project teams, requiring regular weekly meetings with the students; and many serve as advisors to undergraduate research projects. Faculty members also serve as advisors for professional societies requiring attendance at chapter meetings, advising student leaders, and traveling with students to regional and national conferences and competitions.

**Interactions with Industry and Government**

The department contributed over many years in providing services to several different state offices and the private sector as well. These services have included a variety of activities including:

1. Contacting with Ministry of Health for the assessment of natural derived drugs:

**Dr. *Maha Noori Hamad*** (Head of Pharmacognosy Department, College of Pharmacy, University of Baghdad) is a member of special team for the accomplishment of this purpose.

2. Contacting with Ministry of Industry:

**Dr. Ali Rahman** teacher in Pharmacognosy Department, College of Pharmacy, University of Baghdad was included with special groups which have direct contact with this Ministry for preparation and assessment of many research concerned Iraqi medicinal plants.

**Faculty Development**

Faculty professional development activities include: attending seminars and lectures, participation in training workshops, attending professional conferences, professional writing activities, review activities, conducting new and original research, training programs inside and outside Iraq.

**Facilities**

**\* Space**

The Pharmacognosy Department faculty and students have sufficiently adequate (with minimum requirements) facilities available for conducting a successful program. The facilities include several classrooms, laboratories, workshop, faculty offices, department library, college and university libraries, university students club, and network access facilities.

**\* Laboratories**

Pharmacognosy Department contains many laboratories which includes many devices and equipment used to conduct the experimental tests by undergraduate students and it is helpful to conduct the Pharmacognosy projects by the 2nd and 3rd class students, in addition to the ability of using many of them to achieve different tests and other works to the government establishments, private sector, postgraduate students and researchers generally. The most important instruments found in our department:

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| --- | --- |
| **Instruments** | **Manufacturer** |
| Chiller: Ultratemp 2000, Julabbo F30 | Buchi/ Germany |
| Elemental microanalysis (CHNOS) : EuroEA Elemental analyzer | IRMS/ Italy |
| Electrical sensitive balance | Sartorius/ Germany |
| Fourier transforms infrared spectra (FT-IR) spectra were scanned on Shimadzu FT-IR-8400S Infrared Spectrometer | Shimadzu /Japan |
| Gas chromatography GC-QP Ultra Shimadzu. Instrument model :AOC-2 Oi | Shimadzu /Japan |
| High Performance Liquid Chromatography (HPLC) | Waters / Germany |
| Jobling Laboratory Division thin layer chromatography TLC Coater. | Germany |
| Melting point: melting point was determined by electro–thermal melting point | Stuart / UK |
| Oven: Memmert 854 | Buchi /Germany |
| Preparative HPLC (JASCO FC-2088-30) | Jasco/ Japan |
| Rotatory evaporator: Buchi rotatory evaporator attached to vacuum pump. | Buchi/ Germany |
| Ultraviolet light (DESAGA HEIDELBERG) of 254 nm and 366 nm wave lengths. | DESAGA/Germany |
| Ultra violet (UV) spectra were recorded in methanol using computerized spectrophotometer Shimadzu (UV-1700) | Japan |

**\* Faculty Offices**

Most of these offices are for two faculty members each, and some are for three members. The offices have adequate furniture and air-conditioned and equipped with computers or network connection. It should be noted, though, that the faculty offices are small in size such that they are inadequate to hold a discussion between the faculty and more than 2-3 students. The average faculty office space is about 10 square meters.

**\*Libraries**

The students can have access to the library of the College of Pharmacy in Baghdad University.

**\*Members of Pharmacognosy Department**

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| ت | الاسم | الشهادة والاختصاص الدقيق |
| 1 | ا.م.د. ايناس جواد كاظم | دكتوراه في علم العقاقير وكيميائية النباتات الطبية رئيسة فرع العقاقير |
| 2 | أ.م. مهى نوري | معاون العميد لشؤون الطلبة |
| 3 | م. علي رحمان جاسم | دكتوراه في علم العقاقير وكيميائية النباتات الطبية |
| 4 | م.ﺬكاء زهير عبد الجليل | ماجستير في علم العقاقير وكيميائية النباتات الطبية حاليا طالبة \كتوراه |
| 5 | م.م. ضحى عبد الصاحب | ماجستير في علم العقاقير وكيميائية النباتات الطبية (مقررة الفرع) |
| 6 | م.م.نبأ محمد ابراهيم | ماجستير في علم العقاقير وكيميائية النباتات الطبية |
| 7 | م. زينة مندر | طبيبة بيطرية حاصلة على الماجستير في الفارماكولوجي |
| 8 | م.م.رؤى محمد | ماجستير في علم العقاقير وكيميائية النباتات الطبية |
| 9 | م.م.أمجد حسيب خميس | ماجستير في علم العقاقير وكيميائية النباتات الطبية |
| 10 | م.م.نور صباح | ماجستير في علم العقاقير وكيميائية النباتات الطبية |
| 11 | ص.زهراء سهيل | صيدلانية حاصلة على البكالوريوس في علم الصيدلة (حاليا طالبة ماجستير) |
| 12 | زينب صالح علي | كيمياوية حاصلة على البكالوريوس في علم الكيمياء |
| 13 | زينب صفاء | صيدلانية حاصلة على البكالوريوس في علم الصيدلة (معيدة) |
| 14 | مروة هاشم | صيدلانية حاصلة على البكالوريوس في علم الصيدلة (معيدة) |

**\* Financial Support**

Pharmacognosy Departmental budget is part of the overall College of Pharmacy budget. University of Baghdad and its colleges and departments are a fully supported government institution, with the entire budget coming from the Iraqi government. Moreover, the university also receives some grants and gifts from some state offices and institutions, as well as from some international organizations and civil society organizations. However, such contributions amount to only a small fraction of the government allocations. Thus, the main source of departmental financial support is from government allocations. Additional sources of departmental financial support come indirectly from faculty funded research grants, experimental tests made in some laboratories for various state organizations, and industry consultations.