

PHARMACEUTICAL SERVICES CENTRE AND BIOAVAILABILITY CENTRE



رئيس مجلس إدارة المركز

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Mission:

- Conducting Pharmaceutical and biopharmaceutical studies and measurements for Pharmaceutical products.
- Holding workshops and training programmes on pharmaceutical and biological issues.

Vision:

- Carrying out pharmaceutical studies and drug analysis.
- Increasing contact with pharmaceutical industry.
- Issuing certificate of bioequivalence of generic and innovative drug products.
- The center offers all its facilities, resources and manpower to perform analyses and measurements for the staff members and researchers in the faculty of pharmacy and researchers in other faculties in Assiut University, as well as, to others in research centers all over Egypt.
- The center also plays a role in practical training for pharmacy students.

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Facilities:

Some research utilities are available in the center as high performance liquid chromatography (HPLC) deep freezer and others which view in details below.

Operational Procedures:

Samples submission and receiving

- The center is receiving the samples every day from 8am to 2pm except Saturday and Wednesday from 8am to 5 pm.
- The researchers should fill PSC requisition form and data sheet for each sample.
- Samples are processed and analyzed by well trained pharmacists.
- Finally pharmacists prepare final report with the measurements result to be sent to the researcher.

1- YOUNGLIN High Performance Liquid Chromatograph (HPLC):-

- High performance liquid chromatograph is a form of column chromatography used frequently in biochemistry and analytical chemistry to separate, identify, and quantify compounds based on their idiosyncratic polarities and interactions with the column's stationary phase.



- **Gradient Pump:** flow rate ranges from 0.001 to 16.0ml/min., max. pressure= 6000 psi, 4 gradient channels with vacuum degasser and mixer, solvent delivery mode(isocratic, gradient and constant pressure)

- **Detector:**

1. **UV/Vis. Detector:** Wave length (190-900 nm.), Lamp (tungsten and deuterium)



2. **Fluorescence Detector:** wave length rang (220-700nm) for excitation and emission wave lengths.



2- CAMAG TLC Scanner And Applicator:-

- **The Linomat 5 applicator** offers semi-automatic sample application (only changing of sample, cleaning, filling and replacing the syringe is performed manually) used for qualitative and quantitative analyses as well as for preparative separations.



- **The TLC Scanner 3** is the most advanced workstation for densitometric evaluation of Thin-Layer Chromatograms. It can also be used for densitometric measurements of other planar objects, such as electrophoresis gels. Only the positioning of the object to be measured is performed manually.



- **The scanner** transmits all measurement data in digital form to the computer for further processing, and features three light sources - a deuterium lamp, a halogen-tungsten lamp and a high pressure mercury lamp which can measure reflection, either in absorbance or fluorescence mode and it has spectral range from 190 to 800 nm with scanning speed 1-100 mm/s and Object formats up to 200 x 200 mm.

3- PerkinElmer Gas Chromatograph (GC):-

- It is a common type of chromatography used in analytic chemistry for separating and analyzing compounds that can be vaporized without decomposition. Typical uses of GC include testing the purity of a particular substance, or separating the different components of a mixture, identification and preparation of pure compounds from a mixture.



- **Carrier gas:** nitrogen
- **Detector:** FID, ECD
- **Columns:** Capillary column (30m&0.25mm ID 0.25 um, 60*0.25mm 0.25um) and Packed column.

4- THERMO Gas Chromatography – Mass Spectrometry (GC-MS):-

- The DSQ II with the FOCUS GC is a space-saving quadrupole GC/MS designed for laboratories wanting the ultimate in GC/MS performance but having limited space and funds. The system combines the advanced, next-generation curved optics of the industry-leading DSQ II with the small footprint of the FOCUS GC to create a compact but powerful analyzer for environmental, petrochemical, forensics, toxicology and QA/QC applications.



- This source and detector combination allows detection of smaller concentrations of compounds in difficult matrices, which translates into less prep time, smaller injection volumes, less sample usage, more confidence - real productivity. No more background noise from excited neutrals, no more sample contamination of the sensitive quadrupoles; the curved pre-filter efficiently removes it.

5- THERMO Fourier Transforms Infrared Spectrometer (FT-IR):-

- Fourier transform spectroscopy is a measurement technique whereby spectra are collected based on measurements of the coherence of a radiative source, using time-domain or space-domain measurements of the electromagnetic radiation or other type of radiation.



- ATR technique is non destructive with little or no sample preparation.
- ATR technique can be used to analyze samples that allow good contact with surface of crystal (**Zn-Se**) ex. Glues, Paints, Viscous Liquid, Fibers and Powders.

6- PerkinElmer LS 45 Fluorescence Spectrometer:-

- Fluorescence, Phosphorescence and Bio-Chemiluminescence's measurement modes



emission

- Spectral scanning, including excitation (200-800 nm.), (200-650nm),
- 3D Excitation/Emission (EEM), 3D synchronous scanning and 3D kinetic scanning.
- Single and multiple-wavelength kinetics.
- It is used for bioscience/pharmaceutical applications as Vitamins, biogenic amines, drugs, substance abuse, gene expression and discovery, novel drug delivery systems combinatorial drug discovery, membrane structure studies, toxicity assays, and cell function assays.

7- HORIBA's LA-300 Laser Diffraction Particle Size Distribution Analyzer:-

- It is providing a wide range of statistical measures (0.1 - 600µm), data analysis, and presentation tools with automatic alignment, built-in ultrasonic system for sample dispersion, and powerful pumping system. It provides fast analysis within 20 seconds, with class-leading accuracy and precision.



8- ADP 410 Polarimeter:-

- The ADP410 polarimeter has specifically designed to measure optically active samples with a to 0.01.



been rotation of resolution

9- Tablet Hardness Tester 5Y:-

- The Tablet Hardness Tester has been successfully used to measure breakage, mean, standard deviation, relative standard deviation, maximum, and range of up to 100 measurements can be calculated and stored for analysis.



5Y has tablet deviation, Minimum, data. Up statistical

10- Sartorius ME5 Microbalance:-

- The Sartorius ME^o meets specs with weigh up to 5g μ g readability. Stabilize readings within an ultra fast seconds, for maximum time savings with each weighing operation.
- It is used for minimal sample quantities, μ g-accurate weighing of toxic, hygroscopic, or heavily oxidizing samples can be done in laminar flow boxes, glove boxes or under fume hoods
- Areas with strict demands on cleanliness
- Differential weighing (ashing or incineration, drying, measurement of coatings, checking spillage quantities, etc.)
- Mass determination that allows for air buoyancy
- Air density determination for metrological weight analyses



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11- IlShin Freeze Dryer:-

- The aspect of freezing (Lyophilization) is dehydration of frozen samples under vacuum, this condition minimize oxidation and other degradation process.
- This High capacity sealed refrigeration system can drop inside chamber temperature down to -40 degree in a short time to pre-freeze the sample.
- It is used for drying of sera, antibiotics, enzymes, laboratory samples and food.



12- IlShin Deep Freezer:-

- ultra low temperature environment up to –
- **85 °C**
- It is used for storage and freezing of important samples as medicine and biological products and for biotechnology industry, and ice makers used for test
- tubes and micro tubes.



13- WiseVan Dry Oven:-

- This oven is Suitable for Drying, Baking, Conditioning, Curing, Pre-Heating and Aging.
- Ideal for Culturing Cells to Hybridization, Staining and Destaining Gels, and Combinatorial Chemistry.
- Temperature range from +5°C to 250°C
- Programmable time range up to 99h 59 min.



14- Digital Ceramic Top Hot Plate:-

- This hot plate used for heating and stirring purpose of laboratory mixing solutions, including sample preparation, heating reagents, melting paraffin, warming resinous chemicals, solvent evaporations, titration and media preparation and sterilization using glass or metal vessels.
- It has temperature range from 5 to 450 °C and stirring speeds from 60 rpm up to 1200 rpm.



15- SPE Vacuum Manifold:-

- It is used for Solid phase extraction sample preparation, filtration, and elution are available 24-port configurations. These manifolds help in achieving consistent extraction and filtration results. Multiple samples processing with these manifolds simplify procedures and saves time.



16- WiseShake Digital Shaker-

- Ideal for culturing cells to hybridization, staining and destaining gels and combinatorial chemistry.
- Optimal platform rotation for intensive mixing.
- Digital timer: Max. 99hr 59min.



17- Hettich MIKRO 200R Microcentrifuge:-

- It is used to separate substances or substance mixtures with a density of maximum 1.2 kg/dm³, Human origin and thermosensitive samples.
- It has a maximum speed of 14,000 RPM and with temperature range of -10C to +40C. Also it refrigerates quickly to +4C with the Fast Cool function in 10 to 15 minutes.



18- Homogenizer:-

- A homogenizer is used for the homogenization of various types of material, such as tissue, plant, food, soil, and many others with electronic speed control gives 10,000 to 35,000 rpm for volumes of 0.1 ml.



19- Labnet VX-200 Vortex Mixer:-

- Circular orbit allows vortex motion to be achieved even at low speeds
- Utilizes an optimized counter balance system to minimize vibration.
- Speed Range: 0 – 2,850 rpm
- Operating Modes: Touch or Continuous



	
<ul style="list-style-type: none"> • Unique CombiCup head design can be used with a single tube or a whole handful of optional heads. 	<ul style="list-style-type: none"> • Optional heads accept microplates, microtubes, PCR strip tubes, 15 and 50 ml tubes and blood tubes.

20-Ultrasonic Cleaner:-

- This special design of ultrasonic cleaner (UC- 5150B) is an ideal instrument used for improving both dissolution and emulsifications in solution. Also it has great degassing effect without causing pollution to environment; therefore it has been widely used in biochemical, chemical, and medical fields



21- Double Water Distillator & Single Water Distillator



- Used to produce highly purified laboratory water for biochemistry and trace analysis.
- Output approximately 4 Liters per hour of high purity distillate.

- Used for purification of laboratory water
- Output approximately 3 Liters per hour of high purity distillate.

22- Conductivity/Ph/mV/Ion/Salinity Meter (JENWAY, Model: 4330):-

- It is a specified unit designated to measure and display both conductivity and PH simultaneously.



23- Jenway Model 3505 Laboratory pH Meter:-

- Laboratory pH/mV meter with rotary controls for mode selection, pH calibration and manual temperature adjustment (0 -100°C).



24- Dissolution tester (Dis 8000 Copley):



The most common apparatus used to measure the dissolution rate of solid dose forms are the basket and paddle.

Sturdy, robust construction specifically designed to reduce clutter and maximise visibility and access in the critical sampling area above the water bath.

25-Disintegration tester (DTG 3000 Copley):

They have been specifically designed for use in the quality and production control of normal, plain coated and delayed release coated tablets, and gelatine capsules in accordance with the specifications as laid down in European, United States and associated Pharmacopoeia.



26- Water bath shaker :

Clifton® Shaking water bath, featuring precision PID control, allows observation of set and actual temperature simultaneously. A broad range of accessory flask clips and racks ensures flexibility for routine and specialized work.



27- Sample concentrator with vacuum (Eppendorf) :

An advanced heating technology provides best treatment for your sample which assures quick, efficient and gentle vacuum concentration of DNA/RNA, nucleotides, proteins and other liquid or wet samples. Our new coated lid provides superior chemical resistance against aggressive acids and organic solvents (e.g. TFA, DMSO).



28- Magnetic stirrer (falc):

The different power ratings and strong magnetic force with heating make the instrument ideal for stirring both small and large volumes.



29- Cooling & bench centrifuge (sigma 3-16 Kl):

Sigma 3-16L n is a Universal benchtop centrifuge with Speed range up to 15,300 rpm and Maximum capacity: 4 x 400 ml

User-friendly Spin control L controller.

Sigma 3-16KL have all features of the Sigma 3-16L, plus: n High-performance cooling n Temperature setting range: -10 °C to +40 °C n Rotor cooling also possible at standstill n Pre-cooling function “Rapid Temp”

SIGMA 
Laboratory Centrifuges



Centrifuge

3-16L



Refrigerated Centrifuge

3-16KL

30-cooling centrifuge(3-18ks)

Universal refrigerated benchtop centrifuge with speed range up to 18,000 rpm. Compatible with various swing-out and fixed-angle rotors

Capacity: 4 x 400 ml

Rotor cooling also possible at standstill; CFC-free R134a refrigerant



31-Bath sonicator (Elmasonic p)

The Elmasonic P is the ideal unit for professional applications in analytical and medical laboratories and in industrial production processes. The unit series consists of 6 different unit sizes with tank capacities ranging from 2.75 to 28 litre. Microprocessor-controlled ultrasonic cleaning with multi-frequency technology (37/80 kHz) and special features are perfect for intensive cleaning tasks and laboratory applications. The units are more powerful than standard ultrasonic cleaning units, and the ultrasonic power can be reduced electronically depending on the cleaning task.



32-cyclone distiller device (fistream)

Fistream Ultrapure Water stills improve on the concept of water purification by **distillation** through a unique patented vapour trap which creates a '**cyclonic**' effect eliminating all vapour borne droplets, ensuring that there is no carry over of impurities in the distillate.



33-micro analytical balance (RAD WAG)

Maximum capacity [Max]: 0.8 / 3g

Readability [d]: 1 / 10 μ g

Faster measurement with the new CPU

16 GB RAM – more data management possibilities

The best possible repeatability and USP regulations conformity.

Ergonomics and safety



34- PH meter (jenway)

IT is a simple to use laboratory pH, mV and **temperature meter** for use in general purpose and educational applications. It utilises rotary controls for mode selection and pH calibration. A novel design feature ensures that inadvertent movement of the calibration controls has no effect during sample measurement.



35-uv/vis spectrometer T80+ (pg instruments)

80 Series UV/Vis Double Beam Spectrophotometer by PG Instruments Ltd. UV/Visible Double Beam Spectrophotometer with a wavelength range of 190 - 1100nm. Standalone use with built in LCD display and keypad allows Photometric, Spectrum Scanning and Quantitative programs and printing options.



36-uv spectrophotometer (biochrom)

The **Biochrom** Libra S50 model is robustly designed to deliver reliable, low maintenance **UV/Visible spectrophotometry** in environments with multiple users. Users can quickly and easily walk up to the instrument, set up a sample, select the appropriate measurement protocols and collect the results.



37-oven

BINDER drying chambers with natural convection or forced convection are renowned for their high quality and reliability. Thanks to their extensive redevelopment, these all-rounders are now even more firmly focused on addressing the requirements involved in drying or heating samples. What's more, in addition to the best energy efficiency on the market and convenient operation, the latest APT.line™ technology offers outstanding temperature accuracy to give this new generation of incubators real appeal.



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preface

Pharmaceutical Services Center (PSC) is a special unit in Faculty of Pharmacy, Assiut University since 2003. The center has been established and prepared to serve the society to perform testing services in compliance with international standards. The center is highly equipped with wide range of high technology instruments to meet the demand of research in pharmaceutical, analytical, medical and agricultural fields.

Pharmacists working in the center are well trained and implementing good laboratory practices.

Prof. Dr. Noha Nahedj Atia

Manager of the center

Prof. Dr. Ahmed M. Abd El Mawla

Dean of Faculty of pharmacy

Director Of The Center

نبذة عن نشأة المركز

أنشأت كلية الصيدلة جامعة أسيوط مركز الخدمات الصيدلانية بالكلية بقرار مجلس جامعة أسيوط رقم ٥٠٥ في ٢٥/١١/٢٠٠١ و قرار المجلس الأعلى للجامعات رقم (٢٥) في ٢٧/٤/٢٠٠٢ ، و اعتباره وحدة ذات طابع خاص و قد تم اعتماد اللائحة المالية للمركز بقرار مجلس جامعة أسيوط رقم (٥٢٧) بتاريخ ٣٠/١١/٢٠٠٣ .

وقد تم تجهيز المركز ببعض الأجهزة العلمية اللازمة في فترة عمادة السيد الأستاذ الدكتور / محمد أحمد الشنواني و ظل المركز تحت التأسيس حتى تم استكمال شراء الأجهزة المطلوبة بتمويل من برنامج التطوير المستمر و التأهيل للاعتماد (CIQAP) الذي حصلت عليه الكلية في مارس ٢٠٠٨ .

رسالة المركز :

إجراء البحوث الصيدلانية والقياسات الحيوية للمستحضرات الصيدلانية الجديدة وكذلك عقد ورش عمل وتدريب في المجالات الصيدلانية و الحيوية .

رؤية المركز:-

القيام بالبحوث الصيدلانية ودراسة الإتاحة الحيوية للمستحضرات الجديدة قبل طرحها للسوق والتعاون مع شركات صناعة الدواء .

أنشطة وخدمات المركز:-

يقوم المركز بالمشاركة في:

- خدمة أعضاء هيئة التدريس ومعاونهم بكلية الصيدلة والكليات المختلفة بجامعة أسيوط والجامعات الأخرى بالإضافة إلي مراكز البحوث المختلفة .
- الدروس العملية للطلاب بمرحلة البكالوريوس والدراسات العليا.
- خدمة المجتمع .
- الدورات التدريبية وورش عمل .
- الاستشارات العلمية.

مركز الخدمات الصيدلانية



رئيس مجلس إدارة المركز
الأستاذ الدكتور / احمد محمد عبد المولى
عميد الكلية

مدير المركز
الأستاذ الدكتورة / نهى ناهض عطيه
أستاذ بقسم الكيمياء التحليلية الصيدلانية