RESEARCH FACILITIES

FACULTY OF PHARMACY

2022-2023

RESEARCH FACILITIES

The faculty established different laboratories to enhance and to support the pharmaceutical research, they are currently equipped with many instruments that needed for students. Maintenance and regular inspection guidelines are followed within each laboratory to be sure the working conditions are meet the standards.

The Following, is a list of laboratories and the equipment which contain:

1. Cell Culture and Molecular Pharmacology Lab:

- Safety Cabinet Laminar Flow, CO_2 Incubator, Inverted Trinocular Phase Contrast Microscope, SemiMicro Balance, Compact Digital Microplate Shaker, Refrigerated, desktop laboratory centrifuge, P-Vac Portable Vacuum System, Digital Water Bath, Vortex mixer, Digital Tube Roller, Orbit^{TM} LS Low Speed Laboratory Shaker, Digital Dry Bath, Electrophoresis instruments, Precision Balance 0.01g, C-DiGit Chemiluminescent Western Blot Scanner, Hot Plate Stirrer-230V, P-Vac Portable Vacuum System, Vortex Mixer, Prism^{TM} Mini Centrifuge, Freezer (-20 ^{0}C) and Small fridge (2-8 ^{0}C).

2. Ibn Sina Laboratory for Pharmacological Sciences:

- Drying Oven, Homogenizer, IR Shimadzu, Ultrasonic Water Bath, UV Spectrophotometer, pH Meter, HPLC, Sonicator, Balance, Centrifuge 5000 rpm, Centrifuge 12000 rpm, Melting points apparatus, Gas chromatograph- mass spectrometry, IR spectroscopy, Microplate Spectrophotometer, Dissolution System.

3. Ibn Al-Bitar for Pharmaceutical Chemistry:

- Drying Oven, Incubator, Diffusion Cell Apparatus, Hotplate, Refrigerator, Bio-Safety Cabinet, Water Bath, Thermocirculator, Digital Temperature controller, Electronic Analytical Balance, Bandelin Sonorex digitec.

4. Al-Razi Technology Lab:

- Drying Oven, Water Bath oscillator, Incubator, Reverse Transcriptase PCR machine, Centrifuge Cold Universal, Centrifuge NF 815, Centrifuge Labo Fuge 200, Autoclave, UV Spectrophotometer, Microscope, Auto Vortex Mixer, Mini iight Box, Micro Plate Reader (Elizer), Magnetic Heated Stirrer, Colony Counter, The Oxoid an aerobic jar.

1. The Dionex UltiMate 3000 HPLC-Electrochemical (Thermo Scientific)

One of the most unique instruments you can only have in Jordan. The sensitivity of ECD-3000RS Detector is capable of detecting analytes in the Picomole (10-12 M) range and exceeds in isocratic mode for neurochemical measurements in brain research and In pharmaceutical applications, easily expand to multiple (up to four) independent sensors, simultaneously measures both low and high levels of analytes without losing data to peak with Auto-Ranging feature.

2. The Dionex UltiMate 3000 HPLC- Diode Array (Thermo Scientific)

The UltiMate 3000 HPLC provides excellent chromatographic performance while maintaining easy to use, reliable operation. Data collection at up to 200 Hz using a maximum of four single-wavelength data channels and one 3-D field for best support of ultrafast separations, Excellent reliability and reproducibility with low baseline drift (typically < 500 µAU/h) and both UV and Vis applications with 190–800 nm wavelength range.

3. Gas Chromatograph-Mass Spectrometer (SHIMADZU)

(GC/MS) is a single quadrupole powerful technique, comprising a gas chromatograph (GC) coupled to a mass spectrometer (MS) by which complex mixtures of chemicals may be separated, identified and quantified sample. Routine analyses are fully automated using a range of sample introduction techniques, including large-volume and temperature-programmable injections can reach to 300˚c, high vapor pressure and direct insertion probe. Furthermore, Ecology mode reduces costs associated with power and carrier gas consumption when the instrument is in standby.

4. Stereotaxic Apparatus

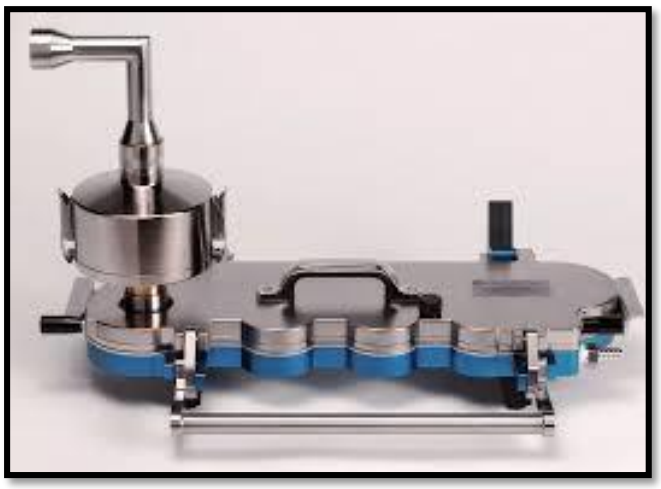
This device is much précised that used to manipulate the brain of living animals. Stereotaxic surgery is a versatile approach that can be used to generate lesions, manipulate gene expression, or deliver experimental agents to the brain. This technique allows researchers to accurately target deep structures within the brain through the use of a stereotaxic atlas, which provides the 3D coordinates (x, y, and z) of each area. As well as the associated equipment and accessories for stereotaxic surgery are anesthesia setups, micro-syringe and micro drills making detection and measurement of neuronal activity of the brain very well.

5. Multiskan™ Microplate Photometer (Thermo Fisher)

The UV-visible spectrophotometer is used to measure absorbance in a variety of research and clinical applications with the easy-to-use. The Multiskan provides proven performance and reliable results through this Features; wide wavelength range of 340 to 850nm, fast reading of both 96- and 384-well plates, Shaking and incubation up to 50°C for temperature critical assays. As well as the ability study of the pharmacokinetics of the drug and polymer. Moreover, Multiskan™ FC Microplate supports internal software which is making it ideal for qualitative and quantitative ELISA applications in clinical laboratories.

6. Next Generation Impactor (Copley Scientific)

The unique instruments you can only have in Jordan. The Next Generation Impactor (NGI) is a high-performance, precision, particle classifying cascade impactor, designed specifically for the pharmaceutical industry for testing metered-dose inhalers (MDI), dry-powder inhalers (DPI), nebulizers and nasal sprays. In addition, there are eight nozzle pieces in the NGI, corresponding to seven size-fractionation stages, a micro-orifice collector that takes the place of a final filter and apply multiple flow rates (15 L/min, 30 L/min, and 90L/min).



7. Fourier-transform infrared spectroscopy (PerkinElmer)

FTIR is a technique used to obtain an infrared spectrum of absorption or emission of a solid, liquid, and plastic with spectral range from 350 cm^{-1} to 8300 cm^{-1}. Typically, FTIR get optimal results because it able to Identify contaminants and impurities in product safety studies, rapidly screen ID and quality of raw materials, intermediates and formulated products. This device supplies with Spectrum 10™ software to enhanced security for data.

8. Dissolution Apparatus

Drug release behavior of pre-formulations is made possible by dissolution testing, which simulates the behavior of capsule, bead, and enteric coated tablets in vitro. Examples of the most popular dissolution equipment include the paddle apparatus, which is utilized in the dissolution studies of extended release products. Key considerations for purchasing dissolution equipment include the formulation of the compound, the type of reagents required for dissolution testing, the particular excipient utilized in the formulation, laboratory conditions, and regulatory compliance requirements.

9. Ultraviolet – visible spectroscopy (UV-Vis)

Absorption spectoroscopy or reflectance spectroscopy in th ultraviolet spectral region.

UV-Vis spectoroscopy is routinely used in analytical chemistry for the quantitative determination of different analytes, such as: highly conjugated organic compunds and biological macromolecules.

Spectroscopy analysis is commonly carried out in solutions. .

10.Centrifuge's Autoclavable Rotor

Centrifuge's autoclavable rotor, made of impact resistant fiberglass- reinforced polyamide, offers high stability and outstanding run characteristics.

An extensive range of adapters permits centrifugation of all standard 5, 7, 10 and 15 ml tubes , including the popular Sarstedt ®, Monovette®, BD Vacutainer ®, and Terumo ®, VenoJect ® , Blood collection tubes

11. Cold Centrifuge's Autoclavable Rotor

A Centrifuge is apiece of equipment that puts an object in rotation around a fixed axis (spins it in a circle), applying a potentially strong forces perpendicular to the axis of spin (outward).

Very high speed centrifuges and ultracentrifuges able to provide very high accelerations can separate fine particles down to the nano-scale, and molecules different masses.

12. Sonorex Ultrasonic Baths (Bandelin)

Sonication can be used for the production of nanoparticles, such as nanoemulsions, nanocrystals, liposomes and wax emulsions, as well as for wastewater purification, degassing, extraction of the plant oil, extraction of the anthocyanin and antioxidants.

The new generation has Full operating and display comfort with all unit sizes, Logical key operation with clear symbols, Warning LED for overtemperature, DEGAS - freely selectable impulse sound - visible on the LED display, SweepTec for continuous sound field oscillation for even and gentle cleaning, Filling level marking for safe dosing, Vibrating systems with high efficiency

13.Rotary Evaporator (HEIDOLPH)

A rotary evaporator is a device used in chemical laboratories for the efficient and gentle removal of solvents from samples by evaporation.

Description

Equipped with smart details such as Easy-Clip, patented clamping sleeve, lift stop to limit immersion depth, universal 5 L heating bath and various glass accessories, Clear digital display for monitoring the current values and separate button to display the set values, Operating panel is splash water protected in accordance with IP 42, Two separate operating knobs for adjusting the rotation speed and heating temperature with LED ring light system for activity indication, Activated lock feature prevents inadvertent adjustments, Residual heat indicator when >50 °C

14. PCR Machine

The **thermal cycler** (also known as a **thermocycler**, **PCR machine** or **DNA amplifier**) is a laboratory apparatus most commonly used to amplify segments of DNA via the polymeras chain reaction (PCR).

Thermal cyclers may also be used in laboratories to facilitate other temperature-sensitive reactions, including restriction enzyme digestion or rapid diagnostics.

The device has a *thermal block* with holes where tubes holding the reaction mixtures can be inserted. The cycler then raises and lowers the temperature of the block in discrete, pre-programmed steps.

15. Compact Digital Microplate Shaker

Stable and accurate microplate shaking with standard and enlarged platform that can shake maximum of six microplates at one run.

16.Digital Dry Bath, Dual Position

Digital Dry Baths provide accurate "set and walk away" digital temperature selection, eliminating the need for external thermometers and repetitive "fine tuning" of a temperature control knob.

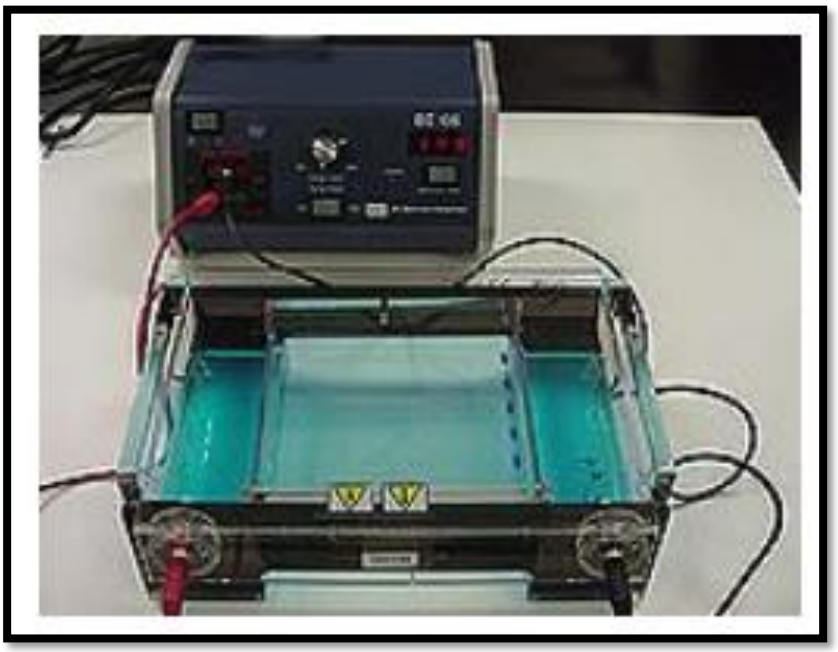
Simply enter the desired temperature on the digital touchpad and the Dry Bath provides accurate temperature with real time monitoring that continuously maintains the selected temperature within ±0.2°C. In addition, a digital timer is built into the touchpad display.

Although it is not designed to shut off the heater, it can be used to alert the user that a chosen time interval has timed out.

The cavities of the high grade aluminum blocks are precision machined to match the conical size and shape of 0.5, 1.5, 2.0, 15 and 50ml tube sizes, providing unsurpassed temperature transfer. Assorted blocks are available for compatibility with nearly all common laboratory tubes and plates. Custom blocks are also available upon request.

17.Electrophoresis

Electrophoresis is a laboratory technique used to separate DNA, RNA, or protein molecules based on their size and electrical charge. An electric current is used to move molecules to be separated through a gel. Pores in the gel work like a sieve, allowing smaller molecules to move faster than larger molecules. The conditions used during electrophoresis can be adjusted to separate molecules in a desired size range.



18. Inverted TRINOCULAR Phase Contrast Microscope, 400x

19. Zetasizer Pro

High performance, versatile and robust

The new Zetasizer Pro is your go-to instrument to measure a wide range of sample types and concentrations. It offers wide dynamic concentration capability and high sensitivity due to the Non-Invasive Back Scatter (NIBS) optical design. Measurement of particle size, molecular size, electrophoretic mobility, zeta potential and molecular weight can all be performed with ease.

The Adaptive Correlation feature enhances sample throughput by reducing measurement duration and providing greater sample knowledge. The deep learning-based data quality system gives you the confidence to know your data is the best it can be.

The optical filter wheel allows measurement of fluorescent samples without impacting overall instrument sensitivity.

Safety Cabinet Laminar Flow

SemiMicro Balance

P-Vac Portable Vacuum System

Digital Tube Roller, 6 Roller Version