

King Saud University, College of Pharmacy Al-Kharj, Department of Pharmacology

Introduction

Pharmacology department is one of the five academic departments constituting the College of Pharmacy. The academic staff members including, the Head of the Department comprises Professors, Associate and Assistant Professors as well as numerous independent senior research staff. The research activities of the department include various approaches of pharmacological studies from molecular to clinical levels. The department has its own good library facilities in addition to the excellent university library facilities which are fully accessible. The lecture theatres and practical labs are highly equipped with all facilities required for excellent teaching processes. Staff members of the department provide to pharmacy students undergraduate teaching of pharmacology, which includes lecture courses and practical classes. Every office, theatre and lab has access to computer networks and thereby to both communal facilities for printing and to the Internet.

What is Pharmacology?

Pharmacology is the study of drug action on the body at various levels including cellular, subcellular and molecular levels. By definition, drugs are chemical agents which produce recognizable biological effects. Pharmacology is an expanding science and is not only concerned with desirable drug effects but also is concerned with drug interactions and adverse reactions. Proper selection of drugs in the management of various body system dysfunctions, search for new molecules and the study of their safety are among the crucial issues within the framework study of pharmacology.

Undergraduate Teaching

The department of pharmacology supervises and teaches a wide array of biomedical and pharmacology courses which are studied in the second, third and fourth years as part of the B. Pharm. Sc. and Pharm. D. programs.

Courses Offered

B. Pharm. Sc. Program

PHL 212, PHL 213, PHL 215, PHL 224, PHL 226, PHL 313, PHL 322, PHL 418, PHL 419, PHL 425.

Pharm. D. Program

PHL 212, PHL 213, PHL 215, PHL 224, PHL 226, PHL 313, PHL 322, PHL 418, PHL 419, PHL 425, PHL 437, PHL 438.

Course Name, Credit Hours and Description

PHL 212 = Anatomy, 3 (2+1).

The theoretical part of the course is concerned with the fundamental anatomical knowledge of the integumental structures and locomotive skeleton (joints and skeletal muscle) as well as nervous, cardiovascular, respiratory, digestive and genitourinary

systems. The practical part of the course is devoted to tutorials and studying on anatomical models the different body organs in each system mentioned within the context of the theoretical part.

PHL 213 = Biochemistry-I, 2 (2+0).

The course deals with the following topics in biochemistry: amino acids and proteins including enzymes, biological oxidation, porphyrins and nucleic acids. The effects of certain xenobiotics (foreign chemicals) including drugs and toxic agents on molecular level and the basis of their clinical impact are emphasized whenever possible.

PHL 215 = Physiology-I, 3 (2+1).

The theoretical part of the course covers the fundamental basis of electrophysiological properties of the cell membrane and the physiological background of the various types of muscles (skeletal, smooth and cardiac), the peripheral nervous system particularly the autonomic subdivision and the cardiovascular system including blood. Regulation and control of the function of each of the aforementioned systems as well as their integrated functions with each other are also emphasized. The practical part of the course is devoted to some relevant physiological experiments belonging to the various topics covered within the context of the theoretical part.

PHL 224 = Biochemistry-II, 3 (2+1).

The theoretical part of the course includes the metabolism of carbohydrates, lipids, proteins and minerals. The effects of certain xenobiotics (foreign chemicals) including drugs and toxic agents on the various metabolic pathways and the basis of their clinical impact are emphasized whenever possible. The practical part of the course is concerned with the determination of some basic biochemical parameters in blood and urine samples and the clinical relevance of their levels is discussed.

PHL 226 = Physiology-II, 2 (2+0).

The course is concerned with the study of the basic physiological functions of the respiratory, renal, gastrointestinal and the central nervous system in addition to the study of the basic physiological pathways responsible for pain sensation. Regulation and control of the function of each of the aforementioned systems as well as their integrated functions with each other are also emphasized.

PHL 313 = Pharmacology-I, 4 (3+1).

The theoretical part of the course deals with general introduction which elaborates on the basic principles of pharmacology. In addition, autonomic nervous system-acting drugs, cardiovascular system-acting drugs, local anesthetics, autacoids and drugs affecting them are discussed. For each one of the given drugs, the pharmacological actions (desirable and undesirable), mechanism(s) of action, therapeutic uses, contraindication(s) and interaction(s) are emphasized. The practical part of the course is devoted to some relevant qualitative and quantitative pharmacological experiments of the in vitro type i.e. carried out on isolated organ preparations.

PHL 322 = Pharmacology-II, 3 (2+1).

The theoretical part of the course covers, in general, the various drugs affecting the central nervous system. The basic principles of central synaptic neurotransmission and drugs used in the management of certain disorders such as: epilepsy, depression, anxiety, insomnia, psychosis, attention deficit syndrome, Parkinson's and Alzheimer's disease, eating problems, inflammation and pain are discussed. A special emphasis on drug abuse and dependence is also given. For each one of the given drugs, the pharmacological actions (desirable and undesirable), mechanism(s) of action, therapeutic uses, contraindication(s) and interaction(s) are elaborated. The practical part of the course deals with some relevant experiments of the in vivo type i.e. carried out on intact animals to demonstrate the pharmacological effects of certain drugs belonging to some topics covered within the context of the theoretical part.

PHL 418 = Pharmacology-III, 2 (2+0).

The course includes drugs used in the management of the following disorders: vomiting, constipation and diarrhea, peptic ulcer, bronchial asthma, anemia, hyperlipoproteinemias, in addition to thromboembolic disorders. The course covers also the various types of anti-parasitic drugs, immunomodulators, aphrodisiacs and drugs used in erectile dysfunctions. For each one of the given drugs, the pharmacological actions (desirable and undesirable), mechanism(s) of action, therapeutic uses, contraindication(s) and interaction(s) are emphasized.

PHL 419 = Toxicology, 2 (2+0).

The course is concerned with the study of the general principles of toxicology and the general mechanism(s) of cellular injury in addition to studying the toxicity of some commonly encountered drugs and chemicals. Signs and symptoms of acute and/or chronic toxicity as well as the general and specific measures used in the management of poisoning are stressed. The course deals also with chemical carcinogens and drugs affecting maternal, fetal and neonatal health.

PHL 425 = Pharmacology-IV, 2 (2+0).

The course deals in general with various drugs affecting the endocrine system. The basic principles of the endocrine system regulation and feedback mechanisms are involved. The course is also concerned with various anti-cancer drugs and drugs used in the management of some skin diseases such as acne and psoriasis in addition to melanizing, demelanizing and local sclerosing agents. For each one of the given drugs, the pharmacological actions (desirable and undesirable), mechanism(s) of action, therapeutic uses, contraindication(s) and interaction(s) are emphasized.

PHL 437 = Pharmacogenomics, 2 (2+0).

The course aims to develop rational means to optimize drug therapy with respect to the patient's genotype in order to ensure maximum efficacy with minimal side effects. The course provides students with a comprehensive overview of the genetic basis for differences in drug response. Genetic variabilities in enzymes, drug receptors, transporters and regulatory proteins involved in promoting and inhibiting transcription and translation processes are discussed.

PHL 438 = Toxicology (Elective Clerkship Rotation), 3 (0+3).

The toxicology rotation is designed for clinical service, education and research. It aims to familiarize the students with the toxicity of substances found in the surrounding environment. Toxicity signs and symptoms as well as subsequent management of exposures to major drug categories, industrial chemicals, household consumer products, plants, animals and substances of abuse are covered. The course involves a weekly presentation and a few hours of laboratories. The unit to be employed is the Drug and Poison Information Centre where the students are properly trained to access clinical histories, utilize information resources and suggest appropriate recommendations for toxicity management.