SYLLABUS DEL CORSO

Biochimica Sistematica Umana

1920-1-H4601D004-H4601D014M

Aims

SYSTEMATICS HUMAN BIOCHEMISTRY

The form aims to describe the biochemical and molecular language, the complex patterns of communication, interaction and control of cell and tissue functions.

Contents

SYSTEMATIC HUMAN BIOCHEMISTRY

The course aims to educate students to reason, in molecular terms, the main cellular metabolisms, understand and explain at the molecular level cellular functions and tissue control systems, in particular connective, bone and tooth tissues. In addition, the course aims to provide students with fundamental knowledge about the biochemical and clinical investigations related to major alterations of organs/tissues relevant in dentistry.

Detailed program

HUMAN BIOCHEMICAL SYSTEMATICS

Metabolic regulation of blood glucose: liver and muscle glycogen. Hormonal regulation of blood glucose.

Gastro entero pancreatich ormones: insulin, glucagon.

Hormones: Hormones and hypothalamic pituitary. Hormones release. GH. Prolactin. ACTH. Vasopressin. Oxytocin. Thyroid hormones. Hormones in the adrenal cortex. Sex hormones. Hormones regulation hunger and satiety

Nervous tissue biochemistry: Biosynthesis and catabolism of neurotransmitters. Neurotoxins. Blood biochemistry and coagulation of the blood elements and plasma proteins. Hemoglobin and myoglobin oxygen transport. The blood coagulation cascade. Anticoagulants and fibrinolysis.

Biochemistry of the liver: Role of gluconeogenesis in the liver. Urea cycle and extra-hepatic mechanisms of elimination of ammonia. Reactions of the urea cycle. Extra hepatic elimination of ammonia. Glutamate and glutamine. Mechanisms of liver detoxification. Degradation of hemoglobin. The metabolism of ethanol. Oxidativestress and free radicals

Biochemistry of skeletal muscle and myocardium: Structure and muscle protein. Mechanism of contraction. Muscle energy metabolism. Biochemistry of connective tissue proteoglycans, glycoproteins, collagen, elastin.

Homeostasis and the regulatory role of Calcium and Phosphorus: Calcitonin, Vitamin D, Parathyroid hormone.

Biochemistry of bone and tooth: Macromolecules of the organic matrix. Mineralization of bone and tooth. Boneresorption. Growth factors and hormones that act on cells of the bone.

Biochemistry of saliva. Biochemistry of nutrition: biochemical aspects of digestion and absorption of nutrients. Basal metabolic rate. Principles of power and fat soluble vitamins. Homeostasis of carbohydrates, lipids and proteins. The fasting-feeding cycle.

Prerequisites

Aims of Preparatory Sciences course.

Teaching form

Lectures and practices.

Textbook and teaching resource

GENERAL AND SYSTEMATIC HUMAN BIOCHEMISTRY BOOKS:

1Baynes JW and Dominiczak: Biochimica per le discipline biomediche Publishing house Ambrosiana

2Siliprandi/Tettamanti: Biochimica Medica, Publishing house Piccin

3 Devlin T.M.: Biochimica, Publishing house Idelson-Gnocchi

Semester

First year of course, second semester.

Assessment method

Written tests: 27 single/multiple-choice quizzes divided between the three different modules and final interview.

Office hours

Reception upon appointment.