INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Option II - null			Field of study	Biotechnology		
Master in	Applied Health Sciences - Biotechnology			School	School of Health		
Academic Year	2023/2024	Year of study	1	Level	2-1	ECTS credits	4.5
Type	Semestral	Semester	2	Code	5055-669-1207-02-23		

Workload (hours)	121,5	Contact hours	T -	TP -	PL -	TC -	S -	E -	OT -	O 56

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s): Josiana Adelaide Vaz, Marcio Soares Carocho

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Identify the different types of biological macromolecules (proteins) and understand their functions.
2. Acquisition of knowledge about fundamental biochemical and hormonal processes.
3. Know the function of the hormones in the human body and the diseases of the gland s of internal secretion.
4. Recognize the importance of hormones and their regulatory mechanisms.
5. Understand and delineate the physiological and pathophysiological proce sses of thyroid and parathyroid diseases, pituitary, pancreas and adrenal glands.
6. Differentiate the characteristics of the exposure phases of the xenobiotic agents and the importance of the existence of a system of Toxicovigilance.
7. Describe the nature of the rou tes of absorption, distribution, biotransformation and elimination of toxic agents.
8. Interpret laboratory biochemical results in order to evaluate clinical cases associated with intoxication.

Prerequisites

Before the course unit the learner is expected to be able to:
NA

Course contents

The content of the curricular unit includes the following topics: 1. Biochemical and hormonal processes, Endocrinology: Endocrine integration and cell signaling; Hypothalamic / hypophysiotropic hormones, Hypothalamic-Pituitary-Thyroid Complex: Supra-renal hormones, Regulation of gluco / mineralcorticoid secretion; Hypothalamic-pituitary regulation; Pharmacogenetics; 2. General mechanis ms of action of toxicants. Biochemical mechanisms of toxicity. Clinical Toxicology;

Course contents (extended version)

1. 1. Biochemi cal and hormonal processes:
   - Proteins and Trace elements
2. Endocrinology - Endocrine integration and cell signaling;
   - Hypothalamic / hypophysiotropic hormones;
   - Thyroid function: physiology, pathophysiology, regulation
   - Hypothalamic-Pituitary-Thyroid Complex - Supra-renal hormones
   - Regulation of gluco / mineralcorticoid secretion and adrenal androgen secretion / estro gens;
   - Pathophysiology of adrenal hormones;
   - Growth hormone; Hormones of the anterior pituitary;
   - Hypothalamic-pituitary regulation;
   - Pancreatic function / exocrine / end ocrine functions / physiology and pathophysiology;
   - Gastrointestinal function / physiology and pathophysiology;
3. Drugs serum monitoring
   - Pharmacogenetics;
4. General mechanis ms of action of toxicants.
5. Biochemical mechanisms of toxicity
6. Clinical Toxicology:
   - Clinical evaluation;
   - Measures to preven t the continued absorption of the poison and to promote its elimination;
   - Antidote administration.

Recommended reading

1. Gonzalez, F. H. (2006). Características dos hormônios. In: Introdução à endocrinologia reprodutiva veterinária. Editora da UFRGS. Cap. 1, p. 1- 16.
2. Marques (2012). Eixos Hipotálamo-Hipófise-Glândulas Periféricas http: //repositorio. hospitaldebraga. pt/bitstream/10400. 23/700/1/Eixo%20Hipot%C3%A1lamo-Hip%C3%B3fise-Gl%C3%A2ndulas%20Pe9ricas. pdf
3. Martinelli Jr. , Custódio & Aguiar-Oliveira. (2008). Eixo GH–IGF. Arq Bras Endrocrinol Metab 2008; 52/5
4. Oliveira, A. , Longui, C, et al. (2002). Avaliação do eixo hipotalâmico-hipofisário-tireoidiano em crianças com síndrome de Down. Jornal de Pediatria, 78(4), 295-300. https: //doi. org/10. 1590/S0021
5. Silva, M. et al. (2007). Cortisol salivar na avaliação do eixo hipotálamo-hipofisário-adrenal em crianças saudáveis. Jornal de Pediatria, 83(2), 121-126. https: //doi. org/10. 1590/S0021

Teaching and learning methods

Lectures using powerpoint presentations. Lectures notes deposited in the e-learning resources. Practical classes - Realization of practical laboratory. Discussion of clinical cases and research papers. Shared teaching with IPG colleague André Araújo.

Assessment methods

- Unic assessement alternative - (Regular, Student Worker) (Final, Supplementary, Special)
  - Final Written Exam - 50%
  - Development Topics - 50%

Language of instruction

Portuguese

Electronic validation

Josiana Adelaide Vaz	Ana Maria Geraldes Rodrigues Pereira	Luis Migue Fernandes Nascimento	Adília Maria Pires da Silva Fernandes
19-04-2024	30-04-2024	30-04-2024	10-05-2024