

Methods for Veterinary Clinical Biochemistry (2 CFU; 40 hours: 16 frontal and 6 practical)

Objectives of the course: at the end of the course the student will know the most important laboratory tests and biochemical techniques applied in the veterinary medicine.

Lectures

General subjects and acquired skills	Subjects	Specific subjects	Hours
<p align="center"><i>1. Analytical Variables in the Clinical Chemistry Lab (TOT 3 HOURS)</i></p> <p align="center"><i>acquisition of basic principles about errors and limits of the main laboratory tests</i></p>	<p align="center"><i>General laboratory concepts</i></p>	Analytical variability, procedure for the evaluation of precision of biochemical methods, estimate of accuracy in terms of slope, intercept, and deviation from linearity. Accepted procedures for validation of instruments and methods. Establishment and clinical use of laboratory reference values: populations, intervals, and interpretations. Autoanalyzer in veterinary clinical biochemistry: calibration, sensibility and sensitivity of an automated method.	2
	<p align="center"><i>Sampling methods and their relevance in biochemical analysis</i></p>	Preanalytical errors: preparation of a quality sample, effect of mixing, centrifugation, and anticoagulants. Artifacts in biochemical determinations: hemolysis, causes of color interference, lipemia.	1
<p align="center"><i>2. CLINICAL APPLICATIONS OF BIOCHEMISTRY IN VETERINARY MEDICINE (TOT 13 HOURS)</i></p> <p align="center"><i>acquisition of: knowledge related to clinical applications of the</i></p>	<p align="center"><i>Methodology and Applications of Disease Biomarker Identification in blood and serum</i></p>	Complete blood count: hemocytometer, automated hematology cell counters, hemoglobin concentration, erythrocyte indices. Blood smear analysis: leukocyte and platelet estimation.	2
		Clinical enzymology: concepts of enzymatic kinetics, diagnostics enzymatic and enzymatic biomarkers of cell damage. Hepatobiliary enzymes:	5

<i>main biomarkers in serum, blood and urine</i>		study of enzymatic biomarkers in hepatic disorders. Muscle enzymatic markers.	
		Non enzymatic assays for monitoring hepatic (bilirubin) and renal function (urea and creatinine tests).	2
	<i>Urinalysis</i>	Physical-chemical urine test, measurement of specific gravity, microscopic analysis of the sediment. Proteinuria: urine-creatinine ratio, urine electrophoresis.	4
3. PERFORM AND CRITICALLY EVALUATE <i>acquisition of: a) correctly execution of an experimental protocol; b) correctly use of clinical laboratory instruments; c) critical skill regarding clinical laboratory results</i>	<i>Spectrophotometry test</i>	Serum total protein determination by the Lowry method.	2
	<i>Quantification of serum glucose by an enzymatic assay</i>	Glucidic metabolism: esokinse assay for glicaemia determination.	2
	<i>Rapid test for urine analisys</i>	Color and turbidity, chiminal analysis, measurement of specific gravity and microscopic analysis of the sediment in different species.	2