



Lectures of Clinical pathology I

Fourth year students

2020-2021

by

Assist. Prof. Dr Mohammed A. Y. Al-Amery

Vet. Int. & Prev. Med.

The clinical pathology-I class schedule

THEORY

Week	Theory	Time
1	Introduction : terminology and concepts	1h
2-5	Clinical hematology (leukocytes and erythrocytes)	3h
6-7	Platelets functions, abnormalities and diagnosis of bleeding disorders	2h
8-9	Examination of bone marrow	2h
10-11	Clinical biochemistry :Basic principles, total proteins,ketones,urea,minerals levels	2h
12	Liver function tests	1h
13	Kidney function tests	1h
14	Water electrolytes and acid base imbalances	1h
15	Exam.	1h
	Final exam	3h

PRACTIC

Week	Practice	Time
1	Collection of different samples, Lab insutrumintation & lab. Safety	2h
2	Erythrocytes count , Reticulocytes count	2h
3	Packed cell volume and Hb determination	
4	Leukocytes parmeters	2h
5	ESR determination, Platelets function abnormalities , Bleeding and clotting time	2h
6	Blood & Lymph smear examination	2h
7	Determine anemine	2h
8	Determine leukemia)	2h
9	Total proteins, ketones, urea, Enzymology ,mineral levels	2h
10	Examination of urine (physical and chemical)	2h
11	Examination of urine (microscopical examination	2h
12	Exam.	2h
	Final exam	Final exam

expectation:

- on class: out class is 1:2

evaluation:

- theory 25 marks
- practice 10 marks
- includd quzes and homework and not exceed 5 marks
- Final exam. T40+P20= 60 marks

Text books:

- Latimer 2011 Duncan and Prasse's Veterinary laboratory medicine-clinical pathology 5th ed.

References:

- Steven L. and Scott, Michael A 2008 Fundamentals of Veterinary Clinical Pathology, 2nd edition
- Weiss and Wardrop 2006 Schalm's Veterinary Hematology 6th ed.
- Coles 1986 vet cl path.

Introduction

Clinical pathology:

Is a study that deal with the use of laboratory methods (clinical chemistry, microbiology, hematology.....) for the diagnosis and treatment of diseases.

Equipment for the basic clinical pathology laboratory:

1. Microscope
2. Microhematocrit centrifuge
3. Refractometer
4. Hand tally
5. Timer
6. Hemocytometer
7. Sahli set

Equipment for the complete clinical pathology laboratory:

1. Spectrophotometer
2. Water path
3. Hematology analyzer
4. Chemistry analyzer
5. Blood gas pH unit
6. Balance
7. Incubator
8. Vacutainer tubes

Vacutainer tubes:

1-An evacuated glass tube containing a premeasured vacuum to ensure that specified volume of blood is drawn.

2-A sterile single used needle suitable for drawing blood after venipuncture.

3-A specially designed holder may be used to secure the needle during venipuncture and insertion into the tube stopper.

Anticoagulants :

1 EDTA = dipot. & disod. Salts of ethylene diamine tetra acetic acid

Mode of action: as chelating agents by combining with calcium.

Advantages: preserve stain ability and morphological character of leukocytes

2 Ammonium & potassium oxalate

Advantages : inexpensive

Disadvantages : cellular distortion within first hour after collection

3 Heparin :

*Mode of action :*interfere with conversion of prothrombine to thrombin

Disadvantages: affecting leukocyte stain ability

4 Sodium and pot. Citrate:

Note commonly adapted for haematology

Sampling:

1.	Sample	Charecters	Preserve	Uses
2.	Blood	No longer 6-12	EDTA	CBC
		Critical 24h	Without anticoagulant	To prepare serum
3.	Serum		Freez	Serological test, Glucose
4.	Blood smear	Thick		Babesia
		Thin	Fixed by absolute methanol	Theileria
		Wet	Fresh blood	Leishmania
5.	Direct smear	From eye, ear, pus...	Coled or freeze	Chemistry, microbiology, cytology
6.	Skin scraping		Fresh or 10%NaOH	Mange, ring worm
7.	Fecal sample	3-5 g	Direct examined or cold	GIT parasites
		1-2 g in steril container	Cold or freeze	Microbiology
8.	Embryo		Freeze	Microbiology
9.	Tissue samples	Lymph node, intestine, placenta, bone marrow	Formaline 10% Freeze	Histopathology Histochemistry and immunology
10.	Fluids	Peritoneal Synovial Cerebrospinal	Cold or freeze	Microbiology Cytology
11.	Discharge	Nasal, lacremal, uterine, vaginal and saliva.	Cold or freeze	Microbiology Cytology Chemistry
12.	Urine	Normal flow	Fresh sample	Physical , cytology