

A training report on

Some Histopathological Tests

Submitted to

Atmiya University

In partial fulfilment of the requirements for the degree of

Bachelor of Science in Biotechnology

By

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Under the supervision of

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Department of Biotechnology

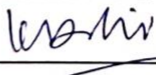
University, Rajkot, Gujarat – 360005

Certificate of Training

This is to certify that Kathiriya Shrutik P. studying in Atmiya University has taken training with us at our **Neuberg Supratech Laboratory Rajkot Pvt Ltd.** for the period from 1-Jan-2023 to 25-Feb-2023. During his training with us, we found him to be sincere, hardworking, conscientious and honest.

We wish him all the best for the future endeavors.

Date: 21/03/23

Signature: 

With good wishes



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DECLARATION

I hereby declare that the work incorporated in the present training report entitled “pathology laboratory report” which is being submitted as a fulfillment of the degree of Bachelors of Science in Biotechnology (year2020-2023). I further declare that this training report is not submitted to any collage/university/or any institute for any kind of certification or degree and report is written by me.

Date- 10th March, 2023.

Place – Rajkot

student’s sign.

ACKNOWLEDGEMENT

I take this opportunity to thank each and every person who made my training possible. My heartfelt thanks to nueberg supratch laboratories for teaching me such valuable practical knowledge about pathology tests and other things and ATMIYA UNIVERSITY BIOTECHNOLOGY DEPARTMENT for giving me this opportunity.

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7	CBC

MACHINES AND INSTRUMENTS:

CENTRIFUGE:

- In pathology labs table top centrifuges are used commonly.
- Separate whole blood components.
- For different assays.
- separate fluid(which have different density).



MICROSCOPE:



- For different types of cells or tissue analysis.
- To get quality image of cells.

URINE ANALYZER:

- Machine which is used to perform automated urine examination
- gives accurate result



REFRIDGERATOR:

- To store chemical reagent and other essential for laboratories.
- Sometimes to store the samples.



GLASSWARES AND PIPETTS/DROPPERS:

- Pipettes/droppers are used to transfer certain amount of samples or chemicals.
- Glassware are used for volumetric analysis.

TUBE GUIDE

SR NO.	COLOUR	ADDED CHEMICALS
1	PURPLE	EDTA
2	RED	CLOT ACTIVATOR
3	GREEN	HEPARIN,SODIUM
4	GREY	SODIUM FLUROIDE,POATASSIUM OXALATE
5	BLUE	SODIUM CITRATE



ABO BLOOD GROUPING:

-ABO blood grouping is the method to determine blood groups using antigen antibody interaction.

-There are certain type off antigens are present on the surface of RBC. Which are A,B,AB Antigens. If there is absence of unique protein that is termed as 'o'.

-Scientists found another protein which is found in monkeys but not in all the humans. That protein is called as Rh.

- Based on that there are total 8 type of individuals.

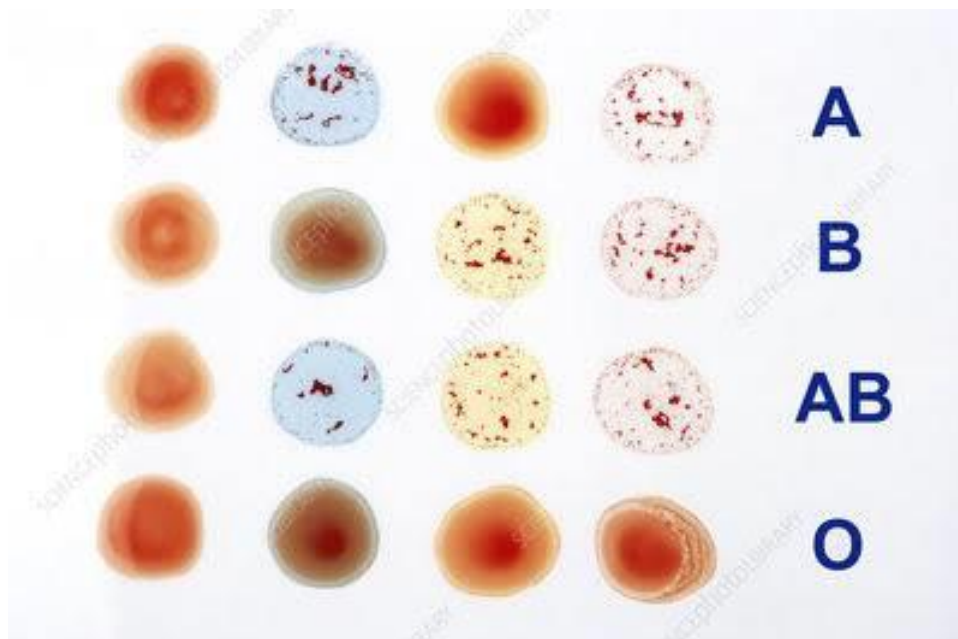
A	A+	Rh present
	A-	Rh absent
B	B+	Rh present
	B-	Rh absent
AB	AB+	Rh present
	AB-	Rh absent
O	O+	Rh present
	O-	Rh absent

During the process , **readymade monoclonal antibodies** are used they bind to specific type of antigen and process of agglutination (formation of clumps , they form because cross link interaction.)

Methodology

- Take a glass plate/slide.
- Add one drop of each ready made antibody(A,B,O).
- Add blood (drop wise/ only on drop).
- Mix well.
- Observe clump formation.

OBSERVATION



Bio chemistry analyzer :

BS-240 is a multi-functional benchtop chemistry analyzer with a throughput of 200 tests per hour. Though with a compact size, it has achieved a host of advanced functions never before found on alike products in the market, making it an optimal chemistry solution for small laboratories and a back-up tool for mid-to-high volume laboratories.



Standby
HOST Admin 08-02 17:22

Current History Statistics

By Sample By Chemistry

Chemistry	Type	Sample ID	Bar Code	Position	Status	Completion Time	Result	Flag	R1 Lot No.	Cal Date/Ti...	Revie
Glu-H	R	1	130104900108		Complete	09-01-20 23 12:14	128.98		1002	29-06-20 22 14:3...	N
T-Bil-V	R	1	330104900006		Complete	02-01-20 23 09:20	150.86		1002	29-06-20 22 14:3...	N
D-Bil-V	R	1	130104900200		Complete	14-01-20 23 09:37	98.20		1002	29-06-20 22 14:3...	N
ALT	R	1	330104900312		Complete	22-01-20 23 09:15	98.01		1002	29-06-20 22 14:3...	N
AST	R	1	130104900322		Complete	23-01-20 23 09:41	110.35		1002	29-06-20 22 14:3...	N
ALP	R	1	130104900342		Complete	24-01-20 23 10:19	203.82		1002	29-06-20 22 14:3...	N
TP	R	1	130104900372		Complete	26-01-20 23 09:52	145.04		1002	29-06-20 22 14:3...	N
TG	R	1	130104900391		Complete	28-01-20 23 12:01	235.34		1002	29-06-20 22 14:3...	N
HDL-C	R	1	130204900006		Complete	01-02-20 23 11:35	162.36		1002	29-06-20 22 14:3...	N
TC	R	1	330204900104		Complete	07-02-20 23 09:46	321.76		1002	29-06-20 22 14:3...	N
CREA-S	R	1	330204900104		Complete	07-02-20 23 11:01	312.41*	R	1002	07-02-20 23 10:2...	N
UA	R	1	130204900132	1-1	Complete	08-02-20 23 09:37	432.83		1002	07-02-20 23 11:5...	N
UREA	R	2	130104900026		Complete	03-01-20 23 12:05	140.38		1002	29-06-20 22 14:3...	N
CRP II											

Search F1 Options F2 Demog F3 Reac Curve F4 Rerun F5 Review F6 Print F7 Host FB

The operation cannot be done in current status

Standby
HOST Admin 08-02 17:24

Current History Statistics

By Sample By Chemistry

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Glu-H	R	2	13010490088		Complete	08-01-20 23 17:17	29.8		2004	29-06-20 22 14:3...	N
T-Bil-V	R	2	130104900374		Incomplete	26-01-20 23 10:57	176.0		2004	29-06-20 22 14:3...	N
D-Bil-V	R	2	130104900406		Complete	30-01-20 23 11:29	18.0		2004	29-06-20 22 14:3...	N
ALT											
AST											
ALP											
TP											
TG											
HDL-C											
TC											
CREA-S											
UA											
UREA											
CRP II											

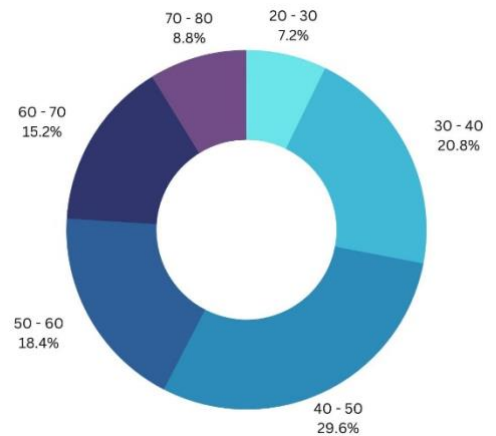
Search F1 Options F2 Demog F3 Reac Curve F4 Rerun F5 Review F6 Print F7 Host FB

The operation cannot be done in current status

Interpretation :

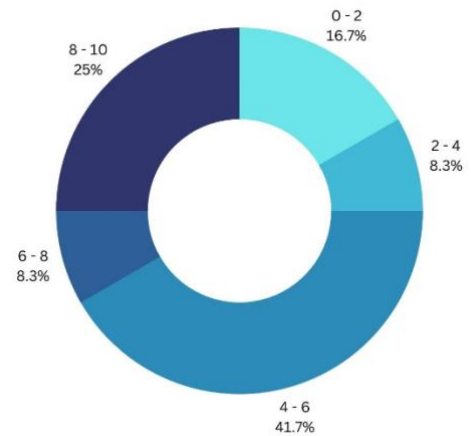
Microalbumin :

- Normal range – 30 mg/dl.
- High level of microalbumin may causes dehydration.
- Low level of microalbumin may causes liver disease & hepatitis.



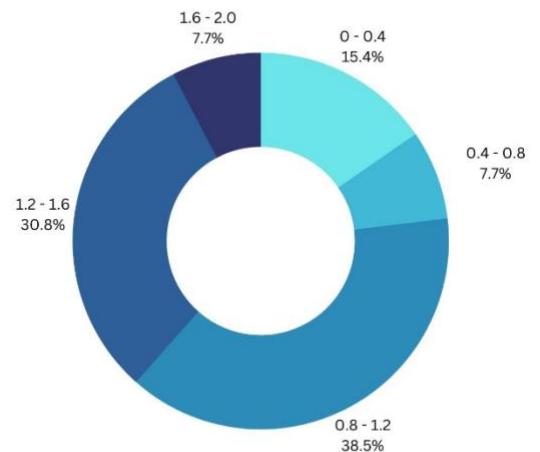
Uric acid :

- Normal range 3.5 -7.5 mg/dl.
- High level of uric acid may causes gout.
- Low level of uric acid may indicate HIV infectionm



Creatinine :

- Normal range 0.7 – 1.3 mg/dl.
- High level of creatin may causes kidney disease.
- Low level of creatinine may causes liver disease.

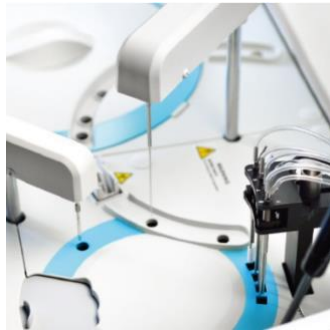


Compact

One of the smallest, up to 200 T/H chemistry analyzers in the market, achieving maximum space saving. 40 positions for sample and 40 positions for reagent, 40 interchangeable to extend.

Utility

Step-by-step maintenance guide for easy operation; Upgraded auto-washing system ensures low carryover and low water consumption.



Technology-enhanced

Smart-sampling technology enables automatic hemolysate preparation for HbA1c test. Pretreatment-free operation guarantees high productivity.

Efficient

A minimum of 100µl reaction volume for reagent saving. Water fall probe cleaning provides better washing.

URINE TEST :

-Routine urine examination contains chemical, physical and microscopic observation.

-It's used to detect and manage a wide range of disorder.

-Generally lab technician examine these 3 aspects.

(a)color and appearance.

(b)Chemical analysis.

(c) Slide/Microscopic analysis.

- **URINE STRIP**

-Urine strips are basic diagnostic tool used to examine urine sample.

-There are 10 different parameters present on the single strip.

-Parameters are:

(a) Glucose

(b)Bilirubin

(c) Ketone

(d)Specific gravity

(e) Blood

(f) pH

(g) Protein

(h) Urobilinogen

(i) Nitrite

(j) Leukocytes

-During urine analysis , strip is dipped into urine sample or urine drop is added by dropper on urine strip.

- Reagents present on strip reacts and changes a color, according to color lab technician examine the urine.
- There is color chart present on the urine strip bottle , by comparison of color urine is examined.



Malaria test:

-Malaria card is visual ,rapid and sensitive solid phase immunographic assayfor qualitative differential detection of malaria antigen.

- Certain types of kits are available for the test that is called MALARIA RAPID DIAGNOSTIC TESTS (RDTs).

- SYMPTOMS

-high temperature, -shivers, -headaches, muscle pain, diarrhia.

-There is square hole for blood, round hole for buffer, result window containing 'c' control line and 't' test line.



PROCEDURE

-Transfer bne in c and lood sample in square hole with the help of pipette.

-add 2 drops of buffer in round hole.

-wait for 20 minutes.

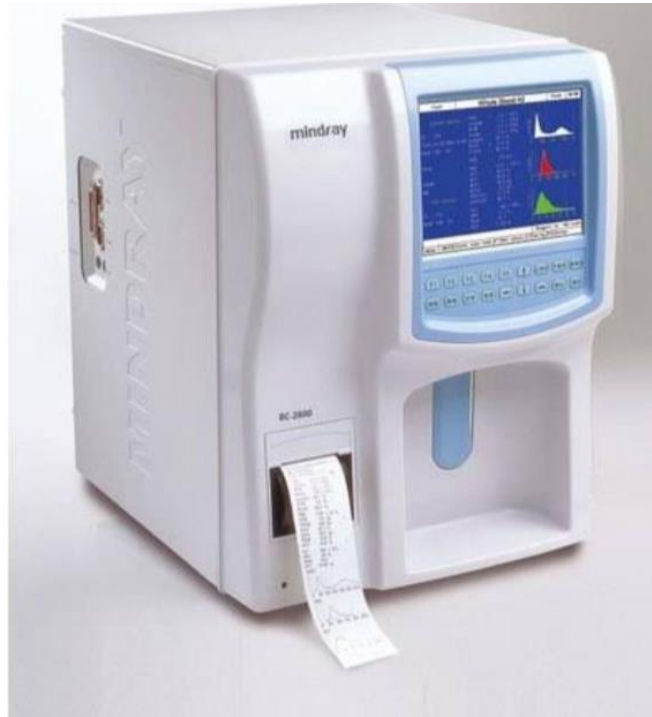
-observe c and t line of the card

- a line in c and t shows that patient have malaria.

-a line in c but not in t shows patient doesn't have malaria.

-no line in c and t means card is invalid.

CBC:



collect blood sample in purple tube.

- clot for 10- 20 seconds.

-put sample in Blood analyzer machine.

- machine will show the no. of cells and different type of cells present in the blood sample.

-Machine will show the result accordingly.

Result :

Parameters	Unit	Normal Range
Hemoglobin	16 g/dl	10-16
RBC Count	6.10 10^6 /ul	3.50-5.50
WBC Count	5.4 10^3 /ul	4-10
Hemocrite	47.2 %	37-54
Mean corpuscular volume	91 fL	80-100
Mean corpuscular hemoglobin	30.60 pg	27-34
mean corpuscular hemoglobin concentration	33.9 g/dL	32-36
Platelet Count	149 10^3 /uL	100-300

Interpretation :

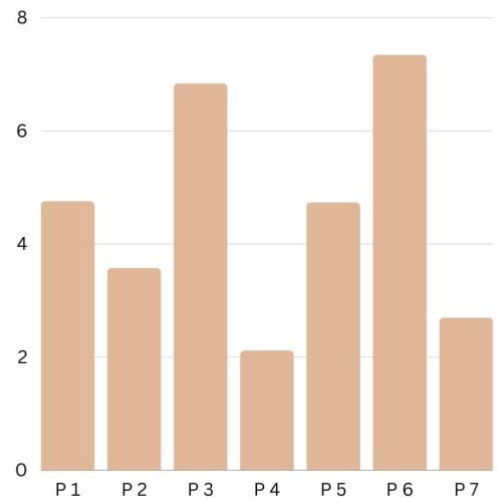
- RBC :

High level of RBCs leads to

1. Heart failure,
2. Causing low of oxygen level.

Low level of RBCs indicated

1. Vitamin B6, B12 or folate deficiency
2. May cause kidney diseases too.



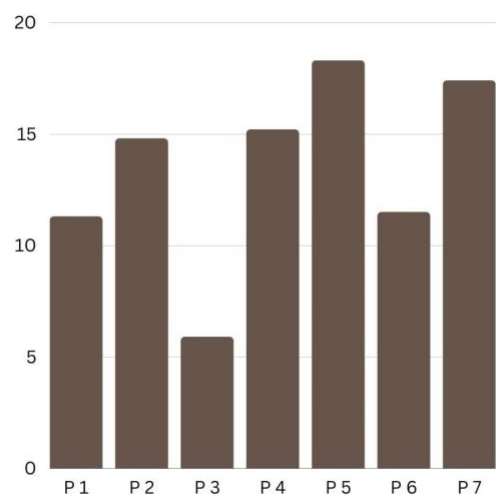
- Hemoglobin :

High levels of it may be like

1. Polycythemia like heart diseases.

Low level may cause anemia which causes

1. Fatigue
2. Weakness



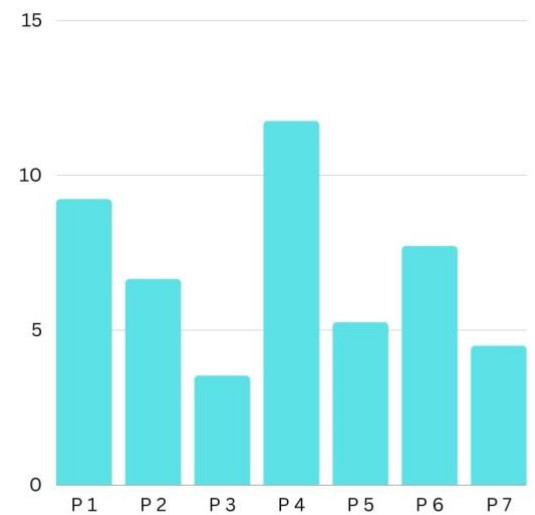
- WBC :

High level of WBC can cause per miculiter. The

- 1.Infection,
2. Inflammatory disorder,
- 3.Leukemia

Whereas low level of it can cause

1. Autoimmune disorder
2. Bone marrow disorder



- Platelets count :

High platelets counts seen in patients with

1. Chronic infaction or inflammatory disease
2. Blood loss from surgery/injury

Low platelets counts seen in patients with

1. Dengue fever
2. Bleeding or platelet disorder

