



Department of Biotechnology

Atmiya University

' YOGIDHAM GURUKUL' KALAWAD ROAD

Rajkot, Gujarat – 360005

Dave Disha M.

Enrollment no: 200601011

[B.Sc. Biotechnology, Semester VI]

A TRAINING REPORT

SUBMITTED TO

Atmiya University In partial fulfilment of the requirements for the degree of Bachelor of Biotechnology By Dave Disha M. (2020-2023)

Under the supervision of

Dr Ishita Vaishnani

at Classic Pathology Laboratory, Rajkot, Gujarat

CERTIFICATE

This is to certify that this training report entitled “Internship – Identification of diseases by lateral flow assay was successfully carried out by Ms. Dave Disha M. Towards the partial fulfilment of requirements for the degree of Bachelor of Science in Biotechnology of Atmiya University Rajkot.

It is an authentic record of her own work, carried out by her under the guidance of Dr. Ishita Vaishnani for a period of 120 hours during the academic year of 2022-23. The content of this report, in full or in parts, has not been submitted for the award of any other degree or certificate in this or any other University.

-Dr. Ishita Vaishnani

-Dr. Nutan Prakash

Name of supervisor

Head of the Department

DECLARATION

I hereby declare that the work incorporated in the present training report entitled “ Identification of different diseases by lateral flow assay “which Being is submitted as a partial fulfillment of the Degree of Bachelor of Science in Biotechnology, Is carried out by me during academic year 2020-2023. The information and articles referred from Authors, journals and library are duly acknowledged. I further declare that this training report written by me has not been previously submitted to this Or any other College/Institute/University for any Certificate/ Diploma/ Degree

Date:28 March 2023

Student's signature

Place: Rajkot

ACKNOWLEDGMENTS

This work was done out during 15 December 2022 to 15 February 2023 at Classic Pathology Laboratory .

I take this opportunity to thank everyone, who made my training possible. All the people that I have

Worked with have contributed to my learning process during all these months. I am highly indebted to

All the people who have spared their valuable time for my training and help me develop my insight for

All the techniques. On the first place I would like to record my gratitude to – Dr Ishita Vaishnani my training guide under Whose supervision, guidance and advice I have completed my training in a successful way. She showed Interest to teach me and enriched my growth in this field

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Introduction

Classic Pathology laboratory

Name : Dr Ishita Vaishnani (M.B.B.S, M.D Pathology)

Contact no : 7041516050

Address: Shop no : 15, Nakshtra 5, sadhu vashwani road.
Raj palace chowk, Rajkot 360005

Email address: classicpathlab21@gmail.com

The Functional Components Of The Pathology.

Laboratory Can Be Listed As Follows:

- Clinical pathology
- Haematology
- Biochemistry
- microbiology



Classic
Pathology Laboratory

Dr. Ishita Vaishnani

(M.B.B.S., M.D. Pathology)

70415 16050

classic_laboratories@yahoo.com

TEST REPORT

Date: 01/04/2023

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Disha M. Dave has worked as a Laboratory technical staff at Classic Pathology Laboratory from 15 december, 2022 to 15 February, 2023.

She was an excellent addition to our team due to her perfection in working with automated laboratory equipments and samples. She is extremely professional with a firm grip on her field of work.

We have no objection to allow her in any better position and have no liabilities in our laboratory.

We wish her every success in her life.

Sincerely,
Dr. Ishita Vaishnani
(MD Pathology)

Classic Pathology Laboratory

The test results are subject to variations due to technical limitations hence co-relation with clinical findings and other investigations should be done

24 Hours Emergency Services.

Shop NO:15,Nakshtra-5,Raj Palace Chowk,Sadhu Vasvani Road,Rajkot-5

The Responsibilities of the Laboratory Worker:

- The laboratory worker plays an important role to find out the cause of disease by Providing the physician the required laboratory test result.
- The laboratory worker thus helps the patients to get better by providing accurate test Finding to the physician.
- The laboratory worker should not offer personal excuses for short-comings in the Performance of duty.
- Equipment and chemicals cost money. The laboratory worker should look after all Equipment carefully and should try to use the correct amount of reagent needed for Each test.
- Many patients are not treated until their reports are kept ready. If these reports are Delayed, patients can not treated early. It is necessary to keep all reports ready in time.
- In the course of laboratory testing, the laboratory work gains a lot of information about Patients and their illness. The laboratory worker must regard this information as strictly Confidential.
- Only the physician who requested the examinations should receive the patient reports.
- Every laboratory worker must maintain high moral & professional standards behaviour.

Material and Methods

Centrifuge:



Used for separation of plasma/serum from blood.

Purification/Separation of biological mixture sample like DNA, RNA, Proteins, RBC, WBC etc.

Haematology analyzer :



A complete blood count (CBC), is a blood panel requested by a doctors, that gives information about the cells in a patient's blood, such as the cell count for each cell type and concentration of various proteins and minerals. The test can be performed via auto analyser. The Complete blood count Generally determines WBC count, WBC differential count, RBC count, Haemoglobin, MCV (mean corpuscular volume), MCH (mean corpuscular Haemoglobin), Platelet count.

Biochemistry analyzer:



The Clinical Biochemistry Analyzer is an instrument that uses the pale yellow supernatant portion (serum) of centrifuged blood sample or a urine sample, and induces reactions using reagents to measure various components, such as sugar, cholesterol, protein, enzyme, etc.

Tubes Details

Purple or lavender: Contain K2 EDTA. This is a strong anticoagulant and these tubes are usually used for complete blood counts (CBC).

Grey: Sodium fluoride and oxalate. Fluoride prevents enzymes in the blood from working.

Red: Without any coagulants used to for various biochemistry tests.



Blood Collection:

1. Rub Alcohol with cotton from where the blood has to be taken.
2. Place the needle hole upside.
3. Hold the injection with one hand and pull it from top.
4. Take the required amount of blood sample.
5. Transfer the sample from injection to tube.
6. Cover the tube with lid and mix it slowly.

Methods

ABO Blood grouping

Principle:

The test to determine blood group is called ABO typing. Blood sample is mixed with antibodies against type A and B blood. Then, the sample is checked to see whether or not the blood cells stick together. If blood cells stick together, it means the blood reacted with one of the antibodies.

Requirements:

Blood sample

Toothpick

Clean glass slide

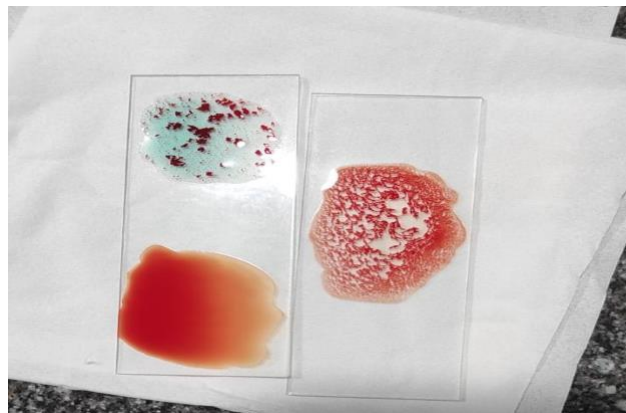
Monoclonal antibodies (Anti. A,B,C)

PROCEDURE:

- Take 2 slides
- Put 1- 1 drop of A, B & O pooled cells
- Add 1-1 drop of serum to each
- Mix well with applicator stick for 1 min & spread at least in 15 mm area of Slide.
- Observe for agglutination.
- interpret the results.

Result:

Blood group	Agglutination with A cell	Agglutination with B cell	Agglutination with O cell
A	-	+	-
B	+	-	-
AB	-	-	-
O	+	+	-



HIV (Human Immunodeficiency Virus)

Introduction:

Antibody tests look for antibodies to HIV in your blood or oral fluid. Antibody tests can take 23 to 90 days to detect HIV infection after an exposure. HIV self-test is antibody tests. HIV tests are use to detect the presence of the human immunodeficiency virus, the virus that causes Acquired Immunodeficiency Syndrome (AIDS), in serum, saliva, or urine.

Principle: The chemical causes the antibodies in the blood to flow along the test stick. When they pass over the section with the antigens, if there are any antibodies for HIV present then they will stick to these antigens and change colour. Once the test is complete, if there is one stripe it means it is a negative result.

Procedure:

- Collect the sample and centrifuge it for 5 minutes
- Aspirate the serum through dropper
- Place a drop of serum on the marked position
- Allow it to dry then place the drop of buffer
- Add in it few drops of dye
- Observe the result

Result: HIV Positive



URINE EXAMINATION

INTRODUCTION:

The routine analysis of urine includes the physical, chemical and microscopic Observation of the urine. It is useful for diagnosis and detection of metabolic or systemic diseases not Directly related to the kidney. It yield a large amount of information quickly and economically.

By colour:

Under normal conditions the colour of urine varies from pale yellow to yellow due To the pigments urochrome urobilin & uroerythin.

Abnormal colour:

Dark yellow or brownish yellow: due to bilirubin, in jaundice.

White: due to chyle, pus

Red: due to red cells

Dark brown to black: due to melanin

Pink: due to uric acid, urate

Blue to green: due to biliverdin

Deep yellow or orange: vitamin B complex treatment

pH strip examination:

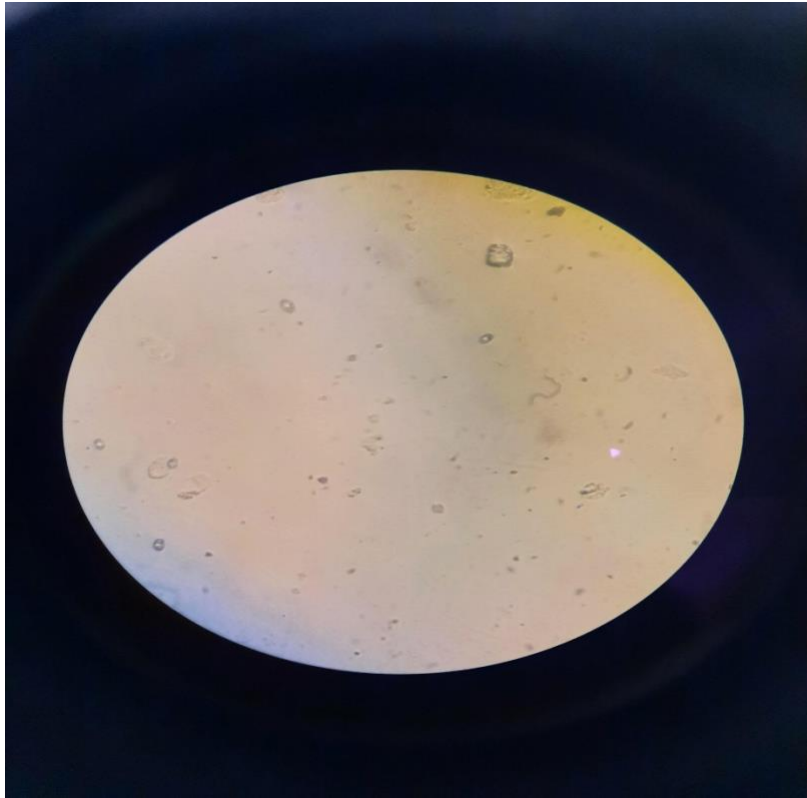
For chemical examination urine test strip or dipstick is used to determine pathological changes in patient's urine. A urine test strip contains up to 10 different chemical pads or reagents which reacts when immersed in, and then removed from, a urine sample. Result of colour change is observed after 30 to 60 seconds of dipping. The analysis includes testing for the presents of glucose, protein, ketones, bilirubin, PH and specific gravity

Normal range: 4.8 to 7.5

When stand for sometime at room temp, pH is converted to alkaline because of Urea is converted to ammonia by bacteria.

04. Prepare smear and cover it with coverslip.

05. Observe under microscope (done by our mentor)



Result: Urine examination : PH is 5.5, Glucose is present (+ +), Protein is absent.

Malaria parasite card test

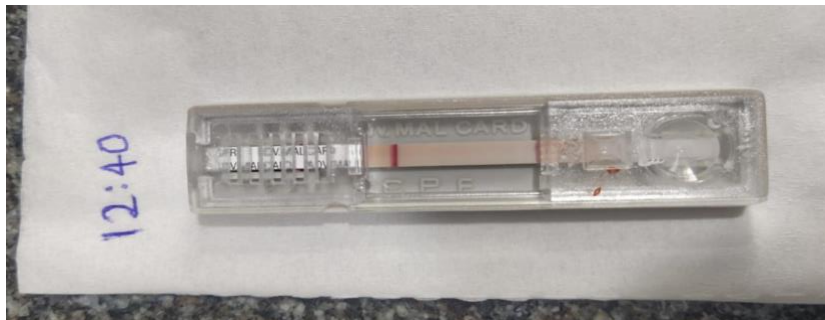
Principle :

A blood specimen collected from the patient is applied to the sample pad on the test card along with certain reagents. After 15 minutes, the presence of specific bands in the test card window indicate whether the patient is infected with Plasmodium falciparum or one of the other 3 species of human malaria.

Procedure:

- Ensure specimen and test kits are brought to room temperature before testing.
- Open the foil wrapped pouch and remove the cassette.
- Transfer the whole blood specimen to the blood collection tube using a pipette or dropper.
- Read the results at 10 -15 minutes once the coloured line(s) have appeared.

Result: Negative.



Widal Test (Typhoid Test)

Introduction:

Typhoid fever is a bacterial infection that can spread throughout the body, affecting many organs. Without prompt treatment, it can cause serious complications and can be fatal. It's caused by a bacterium called Salmonella typhi which is related to the bacteria that cause salmonella food poisoning

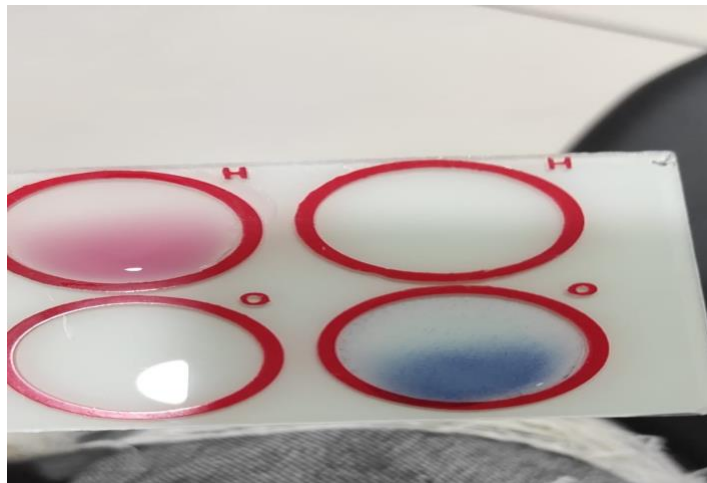
Principle :

The Widal test is an advanced way to check for antibodies that your body makes against the salmonella bacteria that causes typhoid fever. It looks for O and H antibodies in a patient's sample blood (serum). This test helps detect life-threatening illnesses like typhoid fever.

Procedure :

- Put one drop of the patient's serum in four reaction circles, i.e., O, H, AH, BH.
- Add one drop of positive control in the PC circle and one in the NC circle.
- Next, add one drop of O antigen in the O circle, P antigen in the P circle, AH antigen in the AH circle, and BH antigen in the BH circle, respectively.
- Add any antigen, i.e., O, H, AH, BH in both PC and NC.
- Next, mix the serum and antigen in each circle properly so that the mixture doesn't go out of the circle and touch the slide.
- Also, one mixture should not mix with another, as it can influence the test results.
- Finally, rotate the slide in a slow circular motion to ensure a proper mixture of serum and reagent.

Result : Negative



Result of training :

In this laboratory, we have done our many test like, Biochemistry test (glucose, creatinine etc .)

- Urine analysis
- Blood collection

We usually perform some test like glucose, creatinine, SGPT etc. I have wonder full experience to work in this laboratory.

Conclusion:

During work in this laboratory we experienced that how to work with Doctors, lab technicians and staff. Also learned that how to operate some automated machines, how to Work with this machine, how to communicate with patients.

THANK YOU