

INTERSHIP REPORT



A report submitted in partial fulfillment of the
requirement for the award of degree of

BACHELOR OF SCIENCE

IN

CHEMISTRY

BY

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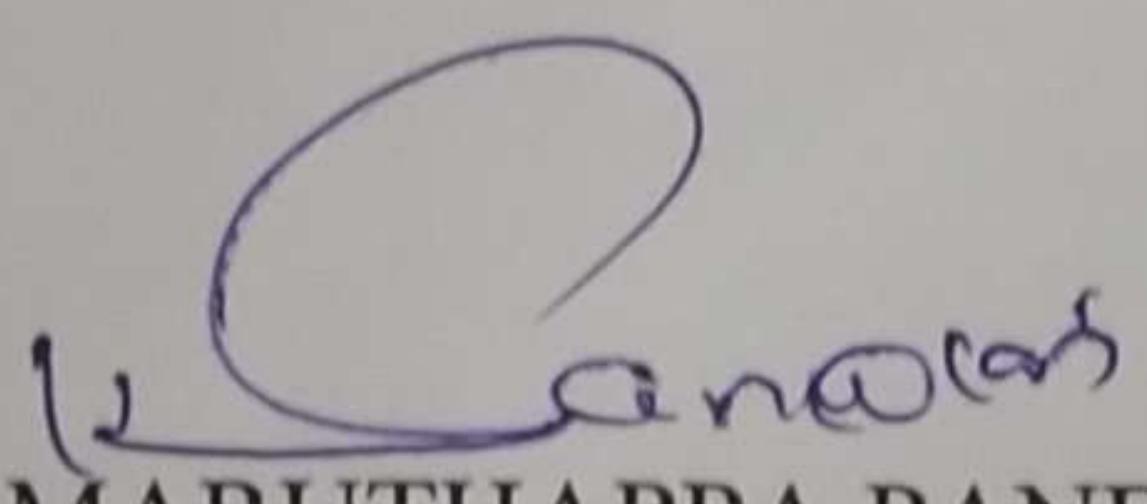
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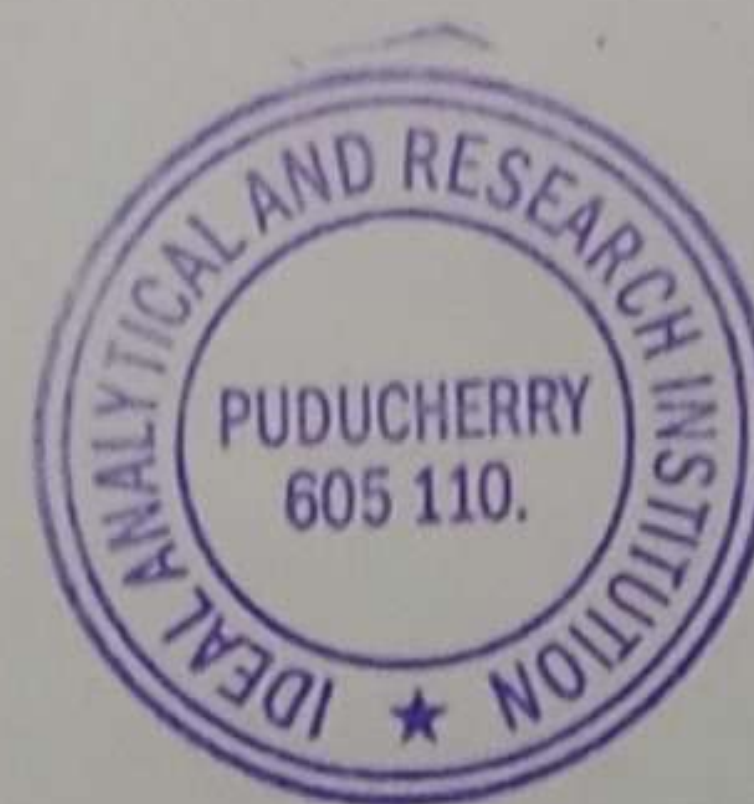
Date: 28.09.2023

INTERNSHIP TRAINING CERTIFICATE

This is to certify that Ms.A.PAVITHRA, (Reg.No:41030012) 3rd year B.Sc Chemistry from Sathyabama Institute of Science and Technology (Deemed University), Chennai, Tamilnadu-600119, has done her Internship Training from 11.09.2023 to 28.09.2023. During which she has been trained in the various Instrumental Techniques such as FTIR, UPLC, HPLC, GC, AAS, UV-VIS Spectrophotometer, Pharmaceutical & Microbial Techniques.

During this period, her conduct was found to be good. We wish her all success in his future endeavour.


K. MARUTHAPPA PANDIAN
(MANAGING DIRECTOR)



ACKNOWLEDGEMENT:

First I would like to thank Guru the Director of Ideal Analytical and Research Institute for giving me the opportunity to do an internship within the organization. I also would like all the people that worked along with me Ideal Analytical and Research Institute with their patience and openness they created an enjoyable working environment.

ABOUT COMPANY:

Established in the year 2010, IAARI is a novel research based organisation, focus on specializing in Pharmaceutical, Biotechnology and Microbiology industries in the form of research services outsourced on a contract basis. In addition to that we also provide the Hands-on instrumentation training and academic project for students and research scholars. Besides this we also offer instrumentation analysis biochemical and pharmaceutical analysis for external samples. IAARI registered under state/ central Government approval (FDA) Form-37 for testing the pharmacy sample analysis. We undertook nearly hundred pharmaceutical manufacturing companies for their samples analysis.

1. ABSTRACT:

High-performance liquid chromatography (HPLC), formerly referred to as high-pressure liquid chromatography, is a technique in analytical chemistry used to separate, identify, and quantify each component in a mixture. HPLC is an important qualitative and quantitative technique, generally, used for the estimation of pharmaceutical and biological samples.

PRINCIPLE:

- ❖ The purification takes place in a separation column between a stationary and a mobile phase.
- ❖ The stationary phase is a granular material with very small porous particles in a separation column.
- ❖ The mobile phase, on the other hand, is a solvent or solvent mixture which is forced at high pressure through the separation column.

TYPES OF HPLC:

- Normal phase.
- Reverse phase.
- Ion exchange.
- Size exclusion.

INSTRUMENTATION:

The Pump:

- ❖ The development of HPLC led to the development of the pump system.
- ❖ The pump is positioned in the most upper stream of the liquid chromatography system and generates a flow of eluent from the solvent reservoir into the system.

Column:

- ❖ The separation is performed inside the column.
- ❖ The recent columns are often prepared in a stainless steel housing, instead of glass columns.
- ❖ The packing material generally used is silica or polymer gels compared to calcium carbonate.

Injector:

- ❖ An injector is placed next to the pump.
- ❖ The simplest method is to use a syringe, and the sample is introduced to the flow of eluent.

Detector:

- ❖ Separation of analytes is performed inside the column, whereas a detector is used to observe the obtained separation.



RECORDER:

- ❖ There are various types of data processors; from a simple system consisting of the in-built printer and word processor while those with software that are specifically designed for an LC system which not only data acquisition but features like peak-fitting, baseline correction, automatic concentration calculation, molecular weight determination, etc.

Advantages of HPLC:

- Speed.
- Efficiency.
- Accuracy.
- Versatile and extremely precise when it comes to identifying and quantifying chemical components.

APPLICATION:

- HPLC has many applications in both laboratory and clinical science.
- It is a common technique used in pharmaceutical development, as it is a dependable way to obtain and ensure product purity.

2. DISSOLUTION TEST:

- In the pharmaceutical industry, drug dissolution testing is routinely used to provide critical in vitro drug release information for both quality control purposes, i.e., to assess batch-to-batch consistency of solid oral dosage forms such as tablets, and drug development, i.e., to predict in vivo drug release profiles.

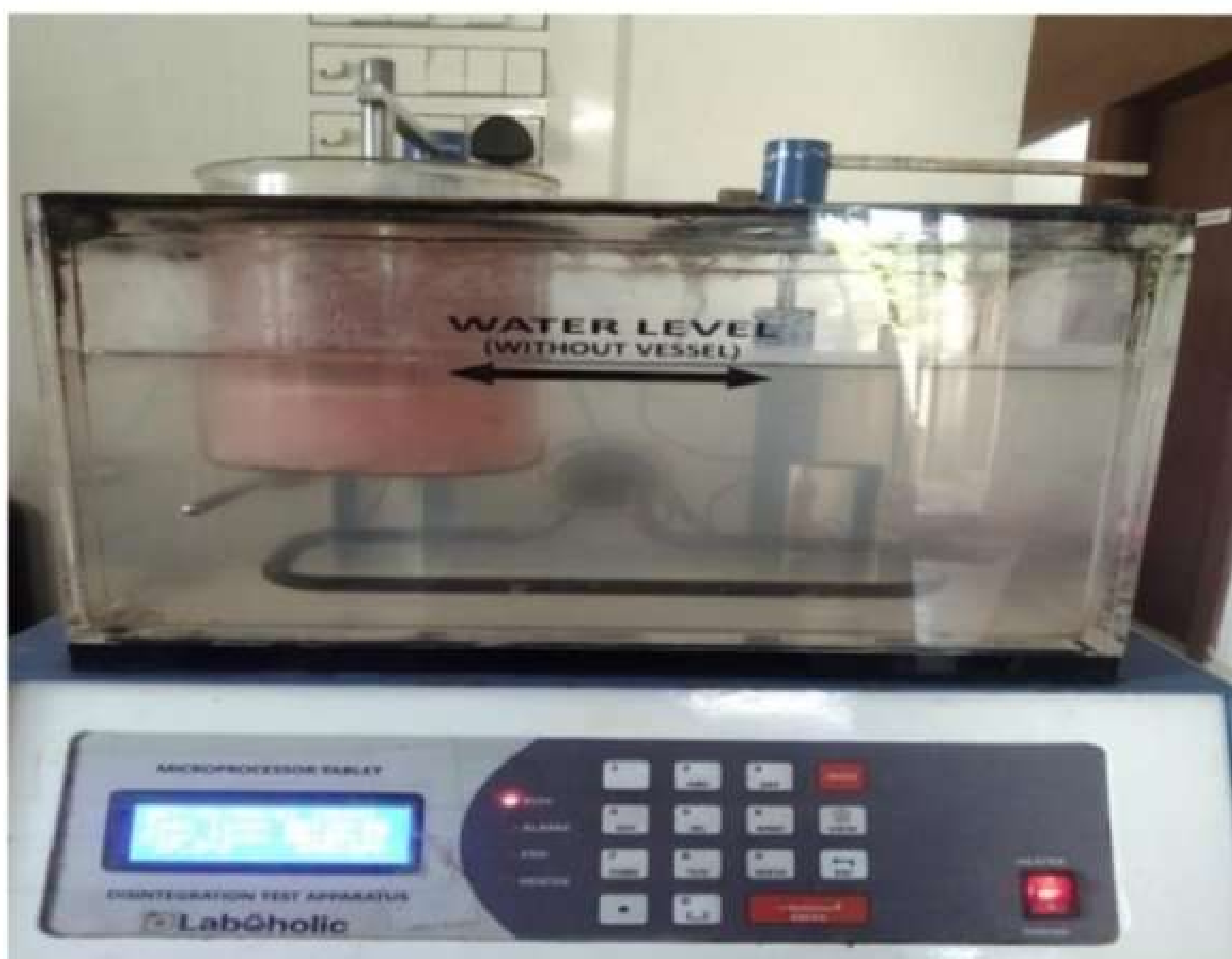


PRINCIPLE:

- ❖ Dissolution is a test used throughout the life cycle of a pharmaceutical product to evaluate the rate of release of a drug substance from the dosage form.

3. Disintegration test:

- ❖ Disintegration testing measures the ability of a tablet to break down into smaller particles or granules to allow the active drug to be absorbed into the body.



USES:

- ❖ The disintegration test is used to show how quickly the tablet breaks down into smaller particles, allowing for a greater surface area and availability of the drug when taken by a patient.
 - TRIVESTIN – Disintegration time 12mins 30sec.
 - LIVAGE PLUS -Disintegration time 3min 2sec.

4. Abstract:

- ❖ Spectroscopy is the study of interaction of electromagnetic radiation with matter.
- ❖ Basic principle of spectroscopy is the beer-lambert's law.
- ❖ In uv-vis spectroscopy, a continuum range of wavelengths from 200nm to 900nm is used.
- ❖ Spectrophotometer device is used in uv-vis spectroscopy. see figure1.
 - Components of spectrophotometer.
 - Sources of light(200nm to 900nm).
 - Monochromator.
 - Sample solution in cuvette
 - Detectors.

- Readout devices.
- Types of spectrophotometer single and double beam instruments.
- Applications of uv-vis spectroscopy qualitative & quantitative analyses.



INSTRUMENTATION:

- ❖ Source of light.
- ❖ Monochromator.
- ❖ Sample solution in cuvette.
- ❖ Photo detector.
- ❖ Readout device.

Major advantages of uv-vis spectroscopy are:

- ❖ High sensitivity.
- ❖ Require only small volume of sample.
- ❖ Linearity over wide range of concentration.
- ❖ Can be used with gradient elution.

CONCLUSION:

The overall experience was positive, and everything I learned would be useful in my future career in this field.