

J. Kewelewsky
INTERNAL
EXAMINAR

EXTERNAL
EXAMINAR

Remarks

27th Sep 2023

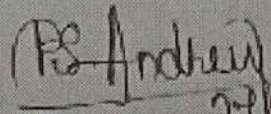
TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Kishore Nandham** (Reg. No: 41030011),
3rd Year, B.Sc. (Chemistry) student of Sathyabama Institute of Science and
Technology, Chennai has successfully undergone his Internship Training at
our Plant-I from 01st September 2023 to 15th September 2023.

During this Internship Training period **Mr. Kishore Nandham A** has shown
his keen interest and his conduct was good.

We wish all success in his future endeavors.

For apex laboratories private limited


ANDREW PS 27/09/23
DGM - Human Resources.

apex laboratories private limited

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CIN : U85105TN1975PTC007554

ACKNOWLEDGEMENT:

I want to thank my advisers and everyone at the company for their patience and assistance during my on-site training. Thanks to their guidance, I was able to develop my industrial skills and learn about quality control department analysis these skills will help me to expand my resume and advance my career

ABOUT COMPANY:

Started in 1978, apex is a pharmaceutical manufacturing and marketing company headquartered in Chennai, India.

The company products are available in Oral Solids, Oral Liquids and Topical dosage forms.

Enjoying brand leadership in Nutraceuticals and Dietary Supplements product segments in India.

the company's branded formulations also are exported to more than 25 countries.

QUALITY:

Maintaining the highest quality is of the utmost importance to our vision and daily routine. Therefore, our instinctive perception is led by the objective of exceeding customer expectations in all quality aspects. Adapting to customer's growing expectations and the dynamic market conditions is the force of our continuous improvements and excellence. It's also the motivation of our unstoping aspiration for higher summits.

When it comes to the pharmaceutical industry, quality is everything. Apparently, this is because the final product affects every patient's life and their ability to take part in the society. It helps patients fulfill their aspirations and contribute to humanity.

Topic :Quality control department:

Type of quality controls:

- HPLC
- GC
- UV

HPLC:(HIGH PERFORMANCE LIQUID CHROMATODRAPHY):

- ❖ It is mobile phase and stationary phase.
- ❖ It is important for determination qualitative and quantitative analysis.
- ❖ It is important for determination of RETENTION TIME
- ❖ The time is requied,after the sample injection maximum angle peak reach to detector.

**Forced Air Circulation Column Oven
Supports Up to 85°C**

Forced air circulation provides higher column temperature stability. Heating capacity up to 85°C enables detection of samples such as for analyzing naphene.

Autosampler Enhances Data Reliability

The excellent reproducibility with a low injection volume less than 1 µL and low carrier flow rate (0.003/0.96) minimize data reproducibility when migrating methods.

**Dual Temperature Control Cell Inhibits
Baseline Fluctuations**

In addition to the flow cell temperature control function, the system also includes a function for controlling the temperature of the detector's optical system (TC-Optical). These functions minimize the influence of external air temperature variations to help ensure a stable baseline.

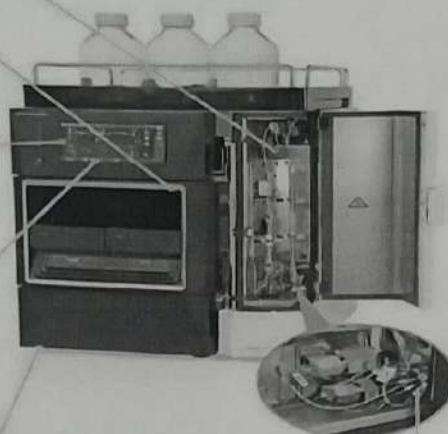
**Touch Panel Enables Sensory-Based
Determination of the Operating Status**

The i-Series user interface features a flow line diagram that allows users to visually confirm the flow lines and column heating speed. Switching between flow lines requires only one touch on the control panel, which significantly reduces the time and trouble involved in transferring methods.



**The Compact Footprint Provides a
Spectrum Operating Environment**

A single i-Series HPLC system can perform the work of two LC systems, so the required installation space is significantly reduced in comparison to testing LC systems.



**Automatically Switch Between Two
HPLC/AMPLC Flow Lines**

The system includes a 30-part flow line switching valve for two flow lines in the same system, one for HPLC and the other for AMPLC. The flow lines can be switched automatically using the software, which significantly reduces the time and trouble involved in transferring methods.

GC: GAS CHROMATOGRAPHY:

- ❖ These industries must prove the purity of their products to regulators and must do so quickly and accurately—two things that gas chromatography offers. Often, industries use gas chromatography to analyze compounds to check for trace residues and contaminants in batches of products.
- ❖ The process of separating compounds in a mixture by injecting a gaseous or liquid sample into a mobile

phase, typically called the carrier gas, and passing the gas through a stationary phase.

- ❖ Gas chromatography has the advantages of high sensitivity, small sample usage, strong separation ability, good selectivity, wide application, and fast analysis.

GAS CHROMATOGRAPHY:



UV SPECTROSCOPY:

- ❖ Ultraviolet and visible (UV-Vis) absorption spectroscopy is the measurement of the attenuation of a beam of light after it passes through a sample or after reflection from a sample surface. Absorption measurements can be at a single wavelength or over an extended spectral range.

UV APPLICATIONS:

- UV-VIS Spec (Electronic spectrophotometer)
- Qualitative and quantitative analysis.
- Detection of impurities from organic mixture.
- Elucidation of structure – molecules.
- Forensic toxicology.
- Molecular weight determination.
- Fat quality determination.
- Determination of metal contaminants...

ADVANTAGES AND DISADVANTAGES:

Advantages:

- ☐ Simple and inexpensive experimentation. Most organic molecules absorb UV/Vis light. Quantitative (Beer's law).

Disadvantages:

- ☐ Mixtures of molecules can be a problem due to overlap (hence, routinely significant sample preparation). Spectra are not highly specific for particular molecules. Expensive instrumentation.

UV SPECTROSCOPY:

