



**MAHARAJAH'S COLLEGE OF PHARMACY**  
(Approved by AICTE, PCI, New Delhi & Govt. of A.P.)  
Phool Baugh, Vizianagaram – 535 002,  
Ph: 08922- 277255, 277355



***“A three day workshop cum training on  
Pharma Instruments”  
On 27<sup>th</sup>, 28<sup>th</sup> & 29<sup>th</sup> July 2017***

**Workshop Report**

<b><u>Executive Summary</u></b>	<b><u>Pg No</u></b>
1. Background -----	3
2. Objectives -----	3
3. Expected outcome of the workshop-	3
4. Participants -----	4
5. Workshop Sessions and Discussions--	4
6. Workshop feedback analysis-----	13
7. Follow-up action plan-----	15

## **Executive Summary**

### **1. Background**

This program intends to bridge the gap between academic training and industry needs in the area of Pharmaceutical Sciences. The program was conducted for three days.

This workshop is designed to train postgraduate students, researchers and academicians. The tentative program consisted of lectures and hands on practical which is intended to provide a clear understanding of theory, research techniques and methodologies involved in handling of sophisticated instruments.

Our diverse and dynamic group of resource persons provided in-depth insight to the theme of the workshop.

Participants explored the training sessions on instruments like UV-Spectrophotometer, IR-Spectrophotometer, HPLC and tablet compression machine.

This report contains background information that was presented to participants, summarizes workshop discussions and catalogs potential adaptation options and next steps that were identified by workshop participants. This report can be used to address the impacts of seminars and workshops in bridging the gap between industry and academia.

**The work shop focuses on the following aspects:**

- **FTIR Spectroscopy - Theoretical and practical aspects.**
- **FTIR Interpretation.**
- **HPLC- Theoretical aspects and problem solving.**
- **UV Spectroscopy - Applications in pharmaceutical analysis.**
- **Handling of Tablet punching machine.**
- 

**The work shop focuses on the following practicals:**

**Hands on training on**

- **UV-Spectrophotometer**
- **IR-Spectrophotometer**
- **HPLC**
- **Tablet Compression Machine**

### **2. Objective**

The primary objective of this event was to bridge the gap and to bring together the strategies of academia and Pharma. Industry.

### **3. Expected outcome of the Workshop**

The tentative program consisted of lectures and demo which was intended to provide a clear understanding of theory, techniques and methodologies involved in research areas which involve handling of HPLC, FTIR, UV Spectrophotometer, Tablet punching machine and related Pharma equipments.

#### 4. Participants

The workshop was well attended. There were 204 participants in the workshop. The participants were postgraduate students, researchers and academicians invited from Andhra University, affiliated pharmacy colleges and M.Sc. life sciences who are involved in instrument handling.

S. No	Name of the college
1	Saint Ann's College of Pharmacy
2	Raghu College of Pharmacy
3	Emmanuel College of Pharmacy
4	Avanthi College of Pharmacy
5	Yelamarthi College of Pharmacy
6	Viswanada institute of Pharm. Sciences
7	Sujana College of Pharmacy
8	Vignan College of Pharmacy
9	Andhra University college of Pharm. Sciences
10	Gitam College of Pharmacy
11	Srinivasa Rao College of Pharmacy
13	Bhasakara College of Pharmacy
14	Gokul College of Pharmacy
15	Sri Venkateswara College of Pharmacy
16	Shivani College of Pharmacy
17	Maharaja Post Graduate Courses

#### 5. Workshop Sessions and Discussion

**Day 1: 27<sup>th</sup> July, 2017 (Thursday).**

**8.30 am**

##### **Registration**

There were 124 registrations for the workshop from other colleges



## 9.00 am - Inauguration



**President of the function Dr. P. Udaya Shankar, Principal,** in his opening remarks emphasized on the significance and training of Pharma. Instruments.

**Correspondent Dr. D. R. K. Raju** in his message quoted that sophisticated instruments are vital for research and hence training on instruments to teachers as well as students through this workshop serves as a platform to enhance practical skills needed for Pharma industry.



**Director, Dr. I. Bhaskar Reddy,** in his message appreciated the college for conducting an event which caters to the enhancement of practical skills.

**Chief Guest, Dr. D. Gowri Sankar, Principal,** A.U College of Pharmaceutical Sciences, Vskp inaugurated the workshop . In his message, he congratulated the college for conducting such a productive event and wished the college all the very best in its future.



**10.00-11.30 am**

**LECTURE-1 A talk on IR Spectroscopy: Basics and Interpretation by**

**Dr.M. Murali Krishna Kumar**

Associate Professor

AU College of Pharmaceutical Sci., Vskp.

The key points discussed by

**Dr.M. Murali krishna Kumar** were

1. Need for Structure elucidation of Organic Compounds.
2. Design of synthetic procedures for bulk production.
3. Semi synthetic modifications.
4. Biosynthetic studies.
5. Alternate resource identification.
6. Structure- Activity relations.



\*\*\*\*\*

11.30 am - Tea break

11.40-12.30 am - Continuation of the lecture

12.30 pm-lunch

\*\*\*\*\*



**1.15-2.15pm**

**LECTURE -2: HPLC basics and trouble shooting**

**By K. Prasanth** Asst. Manager,

Dr. Reddy's, Duvvada Plant, Visakhapatnam

Mr. Prashanth Kandula focused on

1. Components of HPLC.
2. Functions of components.
3. Mobile phase reservoir.
4. Pump (heart of the LC system).
5. Column.
6. Injector & auto samplers.
7. Detector.
8. Steps in problem solving.
9. Peak issues.

The session was very interactive and the delegates actively participated in the interaction.

\*\*\*\*\*

**2.15-4.30 pm**  
**Training/ Practical Session :**  
**Training on IR spectrophotometer**  
**and Punching Machine** was given  
 By **Durbadal chondger**  
 Technical Person from Agilent  
 Technologies, Hyderabad.

The working of the instrument was  
 clearly demonstrated to the  
 participants



\*\*\*\*\*

### Felicitations on Day-1



**Chief Guest: Dr. D. Gowri Sankar, Resource persons: Dr. M. Muralikrishna Kumar, Mr. K. Prasanth.**

4.30 pm- Closing of the first day programme

\*\*\*\*\*

## **Day -2 ; 28<sup>th</sup> July, 2017 (Friday).**

**09.30 – 11.00 am - LECTURE-3**

**Dissolution Studies – A Few Critical Points**

**By Dr. J.Vijaya Rathna**

Professor

AU College of Pharmaceutical Sciences, Visakhapatnam

- Madam described about the importance and application of dissolution
  - i. Tool for new drug abbreviations
  - ii. Standard equipment for accurate dissolution value
  - iii. Quality of the compound and estimation of drug content
  - iv. By knowing the physico-chemical properties of the drug, we can derive the dissolution medium of the drug, which helps in discriminate the drug product.
  - v. bioequivalence, *in vivo*, *in vitro*, effect of food, etc.
  - vi. Discussed in detail about the approaches for setting dissolution apparatus specifications for a new chemical entity.



Table 11 : Enhancement in the Dissolution rate of Dexamethasone phosphate by various HPPC-D complex systems.

Complex System	Increase in $K_1$ (No. of folds)		
	Physical Mixture	Co-Precipitation	Kneading
D-HPBCD (1:1)	1.60	2.20	5.20
D-HPBCD (1:2)	4.80	7.80	11.20
D-PVP (9:1)	1.03	1.20	1.33
D-HPBCD-PVP (1:1.0.2)	4.40	5.60	12.20
D-HPBCD-PVP (1:2.0.3)	13.63	27.23	31.91
D-PEG (9:1)	1.09	1.10	1.14
D-HPBCD-PEG (1:1.0.2)	2.12	3.16	4.64
D-HPBCD-PEG (1:2.0.3)	7.04	10.1	19.72
D-HPMC (9:1)	1.14	1.18	1.20
D-HPBCD-HPMC (1:1.0.2)	2.42	3.64	6.40
D-HPBCD-HPMC (1:2.0.3)	6.80	11.58	25.4

\*\*\*\*\*

**11.00—11.15 am- Tea break**

\*\*\*\*\*

**11.15-12.45 am - Lecture -4**

**Agilent's Spectroscopy Portfolio and Applications**

**By Ms. Sangeetha Ramesan**

Product specialist- spectroscopy,  
Agilent Technologies, Hyderabad.

The following points were discussed in her lecture

- The difference between atomic and molecular spectroscopy, she stated that molecular spectroscopy has more advantages than atomic spectroscopy.
- Detailed explanation regarding UV and IR, CARY360 CARY60 with some of the applications of IR in industries like identification of defects in packing etc..
- IR is most advantageous because It can analyze the sample present in all the states i.e. solid, liquid, gas.
- Added a note on inductively coupled plasma, mass spectroscopy etc.



12.45-1.30 pm-lunch

\*\*\*\*\*



1.30-4.30.pm

Training/ Practical Session on- UV, IR-  
Spectrophotometers.

**By Ms. Sangeetha Ramesan**  
Product specialist- spectroscopy,  
Agilent Technologies, Hyderabad.

The working of the instrument was clearly  
demonstrated to the participants and a hand  
on training was given.

Activity



Simultaneously along with the practical session an activity was conducted by grouping the  
delegates randomly into 5 groups.

**Theme of the activity: Outcome based education Vs Traditional Education**

**Felicitations on Day-2**



**Professor Dr. J. Vijaya Ratna,**



**Resource persons: M. Sangeetha.**

4.30 pm- Closing of day-2 programme

### **Day 3: 29<sup>th</sup> July, 2017 (Saturday).**

9.30-11.00 am

#### **Lecture-5 Introduction to HPLC- Maintenance and trouble shooting**

By **Mr. E.Sadasrinu**

Customer Engineer, Team Lead  
Agilent Technologies, Hyderabad.

The key areas focused by Mr. Sadasrinu were

- How to define HPLC
- The differences between High Performance Liquid Chromatography and Gas Chromatography
- About the components of the high performance liquid chromatography (HPLC) and their working principles
- About the separation process
- Basic Trouble shooting tips



\*\*\*\*\*

11.00-11.15 am Tea Break

\*\*\*\*\*

Simultaneously evaluation of the activity charts was done during the tea break

#### **Activity Evaluation**



Pa

Participants describing the activity chart to the judges



## 11.15-1.00 am Lecture-6

### Luminiscence and its applications by

**Dr. V. Jayathirtha Rao**

Emeritus Scientist

CPC Division, CSIR-IICT

#### Key points:

- Initially he spoke about luminescence & its applications where he emphasized on different types of luminescence including florescence & phosphorescence.
- Explained the principle behind florescence with the help of jablonski diagram and its advantages.
- He gave idea about flurophore and gave the examples for fluorophores present in the body. He explained about excimers and exciplexes.
- He discussed very interesting applications of fluorescence. some of them are fluorescence fingerprinting, fake currency detection & forensic investigations

\*\*\*\*\*

## 1.00-1.30 pm -Lunch

\*\*\*\*\*

## 1.30-2.30 Lecture -7

### HPLC-Applications by

**Dr. V. Jayathirtha Rao**

Emeritus Scientist

CPC Division, CSIR-IICT

#### Key Points:

- He stated that HPLC is a form of liquid chromatography and then explained their applications.
- He has emphasized about various detectors used in HPLC.
- HPLC being a novel and sophisticated technique it has wide range of applications in the fields like pharmaceutical industry, biochemical, forensic analysis, clinical diagnosis, pesticide residue Analysis.
- His talk has majorly focused creative and innovative thinking, publishing papers in journals which made an impact on the students.



**2.30-4.30 pm**

**Training/ Practical Session on- HPLC  
By  
Mr. E.Sadasrinu  
Customer Engineer, Team Lead  
Agilent Technologies, Hyderabad.**

**The working of the instrument was  
clearly demonstrated to the participants  
and hands on training was given.**



**Felicitation on Day-3**



**Resource persons: Mr. E.Sadasrinu, Dr. V. Jayathirtha Rao**



**2.30 - 4.30 pm.  
Principal's closing remarks in the  
Valedictory function**

### Certificate distribution



Vote of thanks by Mr. Ranjit Prasad swain

## 6. Workshop feedback Analysis

- Questionnaire forms were given to delegates on all three days of the workshop.
- Answers written by the delegates were analyzed.

Questionnaire given on 27-7-17

1) What are your objectives /goals/expectations in attending the workshop?

Answers obtained were as follows.

- ❖ To gain more knowledge on the unknown things/instrumentation
- ❖ To learn handling in interpretation of IR and trouble shooting of HPLC

### **Questionnaire given on 28-7-17**

1) How would you rate the first day of the work shop .Justify in 3 points.

Answers obtained were as follows.

- ❖ good lectures, need more time for practical session
- ❖ Food is good
- ❖ Gained more knowledge from seminar & practical session that helps in project works also.
- ❖ HPLC trouble shooting session is very interactive & satisfied.
- ❖ Entire programme was held in a systematic way.

### **Questionnaire given on 29-7-17**

1) How would you rate the training session on Pharma instruments? Justify in 3 points.

Answers obtained were as follows.

- ❖ Learned instrument handling(IR & UV )
- ❖ IR handling demo is nice, clear and neatly explained
- ❖ Training was good especially IR & HPLC.
- ❖ Average rating 4 out of 5

### **Feedback analysis**

- ❖ **Workshop evaluation form was distributed to the delegates on the last day of the workshop.**
- ❖ **The feedback was analyzed. The observations are as follows.**
- ❖ **Parameters –given in the feedback form - FAIR, GOOD, EXCELLENT**
- ❖ **EXCELLENT FEED BACK WAS OBTAINED ON:**
  - Resource person knowledge
  - Levels of presentation
  - Topics covered
- ❖ **GOOD FEEDBACK WAS OBTAINED ON:**
  - Practical to needs and interests.
  - Well organized
  - Well paced.
  - Seminar space
  - Relevant to expected out come
  - Interactive sessions

❖ **FAIR FEED BACK WAS OBTAINED ON:**

Effective activities  
Visual aids  
Acoustics & handouts

❖ **OVERALL FEED BACK: 85% GOOD  
15% EXCELLENT**

❖ **SUGGESTIONS:** Time management to be improved  
More time to be provided for practical session.

## **7. Follow-up action plan**

The following points summarize the potential inputs and next steps identified by workshop participants:

1. Training sessions to be conducted regularly in academic institutions.
2. Working with samples will provide more insight and absolute sense in training sessions.
3. To demarcate sufficient time for training sessions.

-----#####-----