

**WORKSHOP ON**  
**BASICS OF LABORATORY ANIMAL PATHOLOGY TECHNIQUES**

**On Saturday 14<sup>th</sup> September-2019**

**Venue:** Department of Pharmacology

**SPEAKER: Dr. AKARAM BAGAL**

The **Department of Pharmacology, JSS College of Pharmacy, Mysuru** conducted a workshop for a hands-on training experience on the basic pathological techniques to be performed on laboratory animals. The department lead by **Dr. S.N Manjula** (Professor and Head), the teaching members of the department and the students assembled the meeting at 09:30 sharp in the morning on **14-SEP-2019**. The demonstrators, **Dr. Akaram Bagal** and **Dr. Rohini** were invited for the conductance of this workshop.

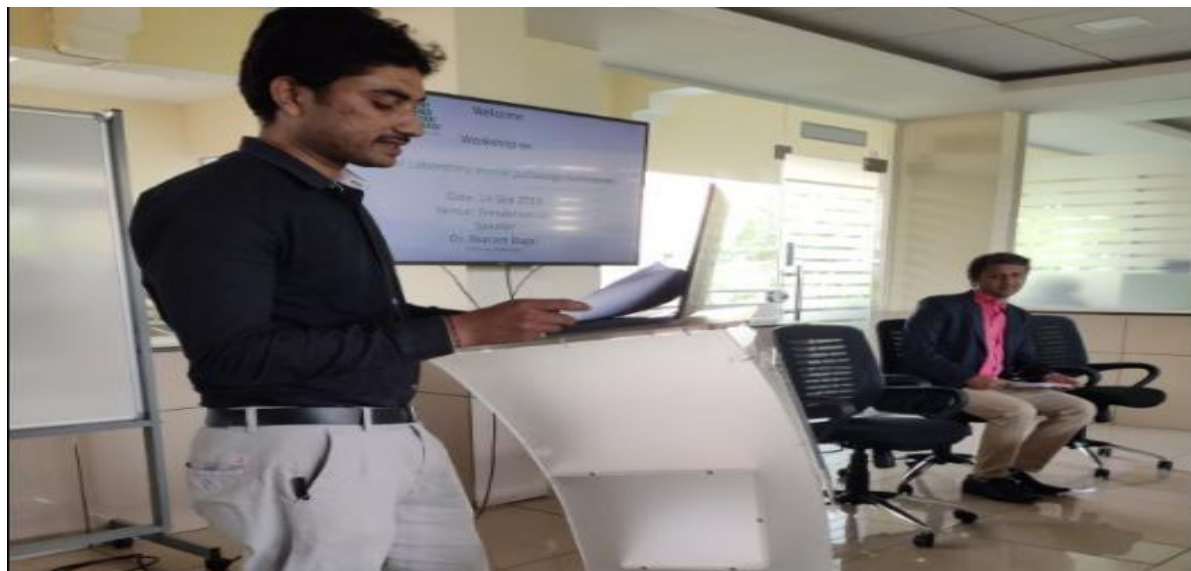
The session was opened by **Dr. S.N Manjula, Professor and Head, Dept. of Pharmacology**. She explained the importance of conducting the workshop and explained how it would impart the technical expertise of the students. She introduced us to the speaker **Dr. Akaram Bagal**, who had come from Pune to help us learn the skills in detail. She also introduced us with **Dr. Rohini**, the senior technical officer.



**(Dr. S.N Manjula, Professor and Head, Department of Pharmacology, talking about the importance of the workshop)**

## TOPIC 1:OVERVIEW OF LABORATORY ANIMAL RESEARCH

**Dr. Vengal Rao.P** gave the detailed introduction of **Dr. Akaram Bagal** explaining about his excellence and expertise in various pathological and toxicological subjects. He handed over the stage to Dr. Akaram Bagal.



**(Dr. Vengal Rao giving introduction about the Dr. Akaram Bagal)**

Dr. Akaram Bagal started his first session by discussing about the topics and introduction about the concepts of using laboratory animals. He discussed about the various programmes being undertaken by the pharmaceutical industries contributing to drug discovery processes. He discussed about the common species of laboratory animals broadly vertebrates and non-vertebrates.



**(Dr. Akaram Bhagal, Chaitanya Laboratories)**

He discussed about the employment of sarcomyces and drosophila species in research. He discussed briefly about each stages involved in drug development start from basic research to post marketing evaluation. He discussed about regulatory research involved in the drug

development process. He explained how the number of chemical entities are filtered and reduced by the time it reaches the stage for FDA approval and discussed about various possible reasons for the sharp reduction in the numbers during drug discovery. He explained about the various regulatory authorities involved in drug development and discovery across the world. He further discussed about the regulatory guidelines involved in the testing of animals formulated by International council for Harmonisation and also put insights about OECD. He discussed about the similarity of OECD with the Indian Schedule Y guidelines.



**(Dr. Akaram Bagal Discussing about the toxicity studies)**

He started to discuss about the in-depth system of pre-clinical toxicity studies by discussing about checking toxic profile of a particular drug/chemical entity. He put his insights on DLT and NOEL. By focusing on test item characterisation he discussed about the selection of a proper strain of animals for a particular study. He discussed about the study timelines and the minimum duration of the studies as prescribed by the ICH-M3 (R2). He discussed about the duration of repeated dose toxicity studies and their significance prior to marketing approval and post marketing surveillance. He explained about genetic toxicity studies and pointed out the topics of reverse and forward mutation assays and other OECD approved assay guidelines. He explained about single and repeated dose toxicity studies, reproductive and carcinogenicity studies and their significance for approval of human use. He discussed about the acute, sub-acute and chronic toxicity studies, about their importance and permissible time duration. He discussed about the preclinical toxicity testing, interpretation of toxicity and about data reporting. He discussed about the GLP principle and the inclusions in GLP and concluded the first session.

## **TOPIC 2: NECROPSY AND GROSS PATHOLOGY TECHNIQUES**

The session resumed after a short high tea break. Dr. Bagal started the session by discussing about the concepts of pathology. He discussed about the importance of preservation and preparation of the histological slides. He also discussed about the essential prerequisites to be ensured before the commencement of a histopathological assessment in an animal. He discussed about the various constraints that are faced due to various human ignorance or involuntary negligence and their ways to avoid them. He displayed an Organ collection checklist which provides an information about the vital organs to be taken care of while performing histopathological study procedures and discussed how they can be dissected for the evaluation. He displayed a video demonstrating how a perfect collection of blood can be performed from rats and how to cut open an animal for further evaluation post visual evaluation. In that video, he highlighted the organs being removed and their characteristic features to identify them properly. He discussed about the special precautions while collecting certain glands along with the adjacent organs. He displayed various images of necropsied organs. He introduced us with various format in which the necropsy data can be collected to avoid confusion. He then moved on to discuss about the stepwise tissue collecting procedures. He explained trimming of tissues and the bodies that formulated certain guidelines such as go RENI and RITA. He provided a detailed explanation on how each organ can be sectioned following the guidelines in order to get a perfect slide. He then went on to discuss about the processing of the trimmed tissues. He informed about various reagents involved for the purpose. He then explained about the sectioning and staining of the tissues. He further discussed about the various dyes-acidic or basic dyes as per their selectivity towards the type of the compounds being targeted. He discussed about carbohydrate staining, and special stains used. He moved on to the concluding part of the session and discussed about microscopic evaluation. He stated that histopathological studies are interpretative and qualitative study. He discussed about the extent of distribution in terms of focal, multifocal, diffuse and focally extensive distribution. He introduced us with the grading techniques. He introduced us with guidelines formed by INHAND for diagnosing the lesions. He showed the pictures showing the microscopic view of transverse and longitudinal sections of various organs by highlighting the presence of adjacent glands. He concluded his session by paying respects to those who have their lives sacrificed for the welfare of mankind. The session has heightened the spirits of the students of pharmacology and how they can easily foresee their future in the profession of toxicology and pathology. The session then broke for lunch.

## **HANDS-ON TRAINING EXPERIENCE**

Post lunch, with great enthusiasm, session started on providing a hands on training on tissue preparation. The importance of this session was to impart the technical skills among the budding pharmacologists in terms of carrying out a perfect histopathological evaluation. Tissue preparation and microscopic evaluation itself has much more importance and thus, is a very critical skill to needs to be mastered by the students. Dr. Bagal was very cooperative and passionately demonstrated each and every step, descriptively and clearly, that were involved in the tissue preparation and tissue mounting techniques. The session parted for a high tea break. On resumption, Dr. Bagal accompanied by the senior technical expert demonstrated how to isolate and store the organs by fixing them into their respective type of reagents. The whole day session proved to be very useful for the students as well as the research scholars. For the first year PG students, it gave an insight of the way toxicological and pathological studies are performed. For the second year PG students, the session had a soothing impact, raising their confidence for the performance of their research projects. Overall, the session for a day was worth remembering and the lessons learnt were archived in the minds of the young pharmacologists.

**Dr. S.N Manjula,**  
Professor and Head, Department  
of Pharmacology

**Dr.T.M Pramod Kumar**  
Principal  
JSS College of Pharmacy, Mysuru