R. J. COLLEGE of Arts, Science & Commerce (AUTONOMOUS)

(Hindi Vidya Prachar Samiti's RAMNIRANJAN JHUNJHUNWALA COLLEGE of Arts, Science & Commerce)
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Affiliated to UNIVERSITY OF MUMBAI || NAAC Re-Accredited 'A' Grade (CGPA: 3.50)

Department of Biotechnology

On Job Training Completion Report

This is to certify that Ms. Manasi Parab has completed On Job Training at

Inga Laboratories P. Ltd.

Date of Commencement	Date of Completion	Total Number of Days	Total Number of Hours completed in OJT
26/12/2023	06/01/2024	8 days	64 hrs.

Name of the Guide/ PI/ Incharge : Mrs. Falguni Taggarsi

Phone Number of Guide/ PI/ Incharge : 9821823430

Email Address of the Guide/ PI/ Incharge : ffalgunijgd@gmail.com

Gupta
22-03-24

Signature of Guide/ PI/ Incharge

Stamp

Report for On Job Training

Name – Manasi Parab

Roll number – 406

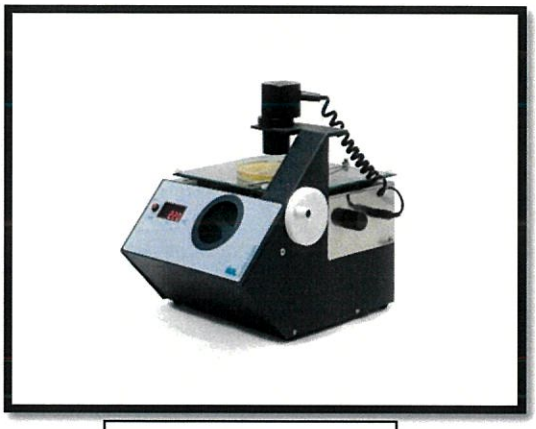
Class – MSc.BT part – 1

As a part of my Master's Degree program, I had the opportunity to undergo On Job Training at Inga Laboratories, a pharmaceutical company in Mahakali Road, Andheri. I was privileged to be a trainee in the Quality Control Microbiology Department and learned different procedures and techniques under the guidance of Mrs. Falguni Taggarsi and microbiologists Miss Komal Matkar and Miss Priyanka Rodrigues. They were incredibly kind and patiently guided me through my learning experience.

Instruments observed and Procedures learned

[1] Antibiotic zone reader

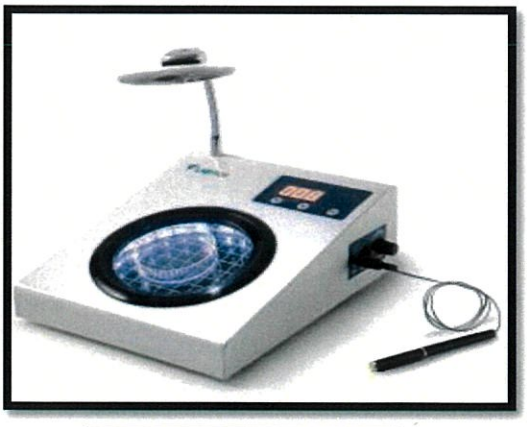
An antibiotic zone reader is used for determining the strength of antibiotic materials by measuring the diameter of the inhibited zone in a petri dish. The Petri plate is first placed on a flat surface and manually rotated with the help of a handle so that one end of the Zone image touches the Mark Line. Once the other end of the Zone image touches the Mark Line, which can be seen in the display or viewing window, readings are noted.



Antibiotic zone reader

[2] Manual colony counter

A colony counter is a device that is frequently used to count bacterial or other microorganism colonies on a plate. It consists of a lens, light source, digital display, and auto marker probe pen, where pressure on a colony causes a count to be registered by an audible beep and an advance on a computer screen. A Petri plate is placed on an electronic pressure pad with light illumination, and each colony on the plate is marked by tapping the plate with an auto marker probe pen. A count is registered in the digital display by the touch's pressure.



Manual colony counter

[3] Bioassay of Vitamin B12

This procedure was done for Haematinga capsules (to treat and prevent nutritional deficiencies such as iron deficiency, anemia, and folic acid deficiency) by using an agar well diffusion assay. This bioassay is used to measure the potency of vitamin B12. Test organisms are swabbed onto petri plates and wells are created using a cork borer. Various concentrations of solutions are then added to the wells. After incubation the zone of inhibition is observed and potency is determined.

[4] Sterility testing

This was the most critical procedure performed and it ensured the absence of viable microorganisms in medicines and raw materials. This is important to prevent contamination and ensure the safety and efficacy of pharmaceutical products. The sterility testing process involves inoculating the sample into a suitable culture medium and incubating it for a specified period. If no growth is observed after the incubation period, the sample is considered sterile. However, if growth is detected, it indicates the presence of viable microorganisms, and the sample is considered non-sterile.

I also learned about airlock rooms, which are frequently utilized in pharmaceutical labs to keep things clean and avoid infection. These are compact, enclosed zones that serve as a boundary between regions that are clean and others that are not. When the room door is opened, the negative air pressure stops infections from moving to nearby, non-contaminated regions and the positive pressure isolation keeps airborne pathogens out of the room to keep the air clean. A manometer was used to measure these pressures.

The pass box or transfer hatch, a tiny cage with two doors intended to move materials or objects between two regions with varying degrees of cleanliness, was another feature used in these rooms. I became aware of the value of keeping sanitary conditions and paperwork during my internship. Additionally, the equipments were calibrated. Along with helping with data validation, I helped with media preparation and autoclave setup.

I am grateful and appreciate a lot of respect to Inga Labs as well as my instructors for providing me with the opportunity to pick up new skills among unfamiliar people and surroundings. My knowledge, abilities, and confidence have all risen significantly as a result of this On Job Training.

Report on Hands on training – Karyotyping

Name – Manasi Parab

Roll number - 406

Class – MSc. BT part -1

The Department of Biotechnology from Ramniranjan Jhunjhunwala College conducted a hands-on training (course) on karyotyping for MSc. biotechnology students of part 1. At the start of this course, I learned about setting up a laboratory, using the right cells and culture medium as well as maintaining a sterile environment. I also gained knowledge on identifying chromosomes. The Leukocyte Culture Procedure is a crucial method used to induce T-lymphocytes from peripheral blood to divide and prepare cells for genetic analysis. This process is essential for diagnosing genetic disorders, understanding chromosomal abnormalities, and conducting genetics research.

The protocol was carried out over multiple days, following each step carefully with proper instructions. The purpose of the leukocyte culture was to obtain a sufficient amount of metaphases for chromosome analysis.

Step 1 - Planting. First, a blood sample was collected and placed in a medium containing PHA (phytohemagglutinin, a mitotic stimulator) and RPMI 1640(Roswell Park Memorial Institute Medium), along with human serum/FBS. The cells were incubated (CO_2 incubator) at 37°C for 72 hours to promote cell growth. At the 70th hour, colchicine (a mutagen that works by preventing microtubule formation and doubles the number of chromosomes) was added to stop the cells at metaphase.

Step 2 – Termination and Fixation. After 72 hours, the cell culture was terminated by centrifuging the cells, removing the supernatant, and adding a KCL solution to preserve the cells. The cells were then fixed using a mixture of glacial acetic acid and methanol. This fixation process ensures that the chromosomes are preserved for further examination and analysis.

RPMI 1640

CO2 incubator

Step 3 - Slide Preparation. The following day, the cells were washed with a fixative solution and dropped onto slides. These slides were heat-dried and stained with Giemsa, a dye that helps visualize the chromosomes under a microscope. By examining the stained slides, we can observe the structure and number of chromosomes present in the cells.

Step 4 - Banding Technique. To further analyze the chromosomes, a technique called G-Banding is employed. This involves treating the slides with trypsin and EDTA to create visible bands on the chromosomes. These bands aid in identifying specific regions of the chromosomes and detecting any abnormalities that may be present.

The **trypsin treatment** helps in creating visible bands on the chromosomes, which are essential for identifying specific regions of the chromosomes and detecting any abnormalities present. It partially digests some of the chromosomal proteins, thereby relaxing the chromatin structure and allowing the Giemsa dye access to the DNA. With a longer trypsin exposure, chromosomes may appear diffused and swollen which should be avoided.

During this practical experience, I developed my laboratory abilities, learned about chromosomal abnormalities, and learned how to recognize chromosomes. Information was also provided about the basics of animal tissue culture and the necessary steps involved in setting up a laboratory for this purpose. I am grateful and appreciate that my teachers allowed us to study these techniques and approaches.