425

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

(Hindi Vidya Prachar Samiti's RAMNIRANJAN JHUNJHUNWALA COLLEGE of Arts, Science & Commerce)
Opposite Ghatkopar Railway Station, Ghatkopar (West), Mumbai 400086, Maharashtra, INDIA.
Website: www.rjcollege.edu.in Email: rjcollege@rjcollege.edu.in Tel No: +91 22 25151763 Fax No: +91 22 25150957

Affiliated to UNIVERSITY OF MUMBAI II NAAC Re-Accredited 'A' Grade (CGPA: 3.50)

Department of Biotechnology

On Job Training Completion Report

This is to certify that Mr. Aniket Arun Mhase has completed On Job Training at

Athena Drug Delivery Solutions PVT. LTD

Date of Commencement	Date of Completion	Total Number of Days	Total Number of Hours completed in OJT
19/12/2023	28/12/2023	7 days	63 hours

Name of the Guide/ PI/ Incharge : Seema Dudaskar / Aarti Sawant

Phone Number of Guide/ PI/ Incharge : 0251-6613105

Email Address of the Guide/ PI/ Incharge : dudaskar.seema@ddsathena.com

Ramniranjan Jhunjhunwala College NAAC Re-Accredited "A" Grade Mumbai-86

Gupta 22-03-24

ATHENA DRUG DELIVERY SOLUTIONS PVT. LTD. ATHENA AMBERNATH

Signature of Guide/ PI/ Incharge

Stamp

ATHENA

28th December, 2023

To,
The Head, Dept. of Biotechnology,
R.J.College of Arts, Science & Commerce (AUTONOMOUS)
Opp. Ghatkopar Railway Station,
Ghatkopar (West), Mumbai 400 086

Dear Madam,

Sub : On-Job Training Certificate

This is to inform you that, your student, Mr. Aniket A. Mhase has successfully completed his training in our Organisation from 19th December, 2023 to 28th December, 2023

During this period he has undergone training in our Quality Control department & Micro department.

During this period he has taken keen interest in learning and understanding Various processes.

He was regular in his attendance and he was found to be sincere and hard working.

We wish him all the best for his future.

.....
R.V.SHRINGARPURE
SR.MANAGER – HR, Admin & G.S.T.

ATHENA DRUG DELIVERY SOLUTIONS PVT. LTD. ATHENA AMBERNATH

ATHENA DRUG DELIVERY SOLUTIONS PVT. LTD.
CIN : U24230MH1995PTCO94546
Plot No. A1 to A5, MIDC, Chemical Zone, Ambernath (West) 421501, Maharashtra, INDIA
Tel. : 0251 - 6613100 • Fax : 0251 - 6613101
H. O. : 602, 6th Floor, STAR HUB, Tower II, Sahar, International Airport Road, Andheri (E), Mumbai - 400099, INDIA.
Tel. No. : 91-22-67370700 • Fax no. : 91-22-67370701 • Website : www.athenadds.com

Name :- Aniket Arun Mhase.

Roll No :- 425.

Std :- Msc Bt Part 1

One Job Training At :- Anthena Drug Delivery Solution Pvt. Ltd.

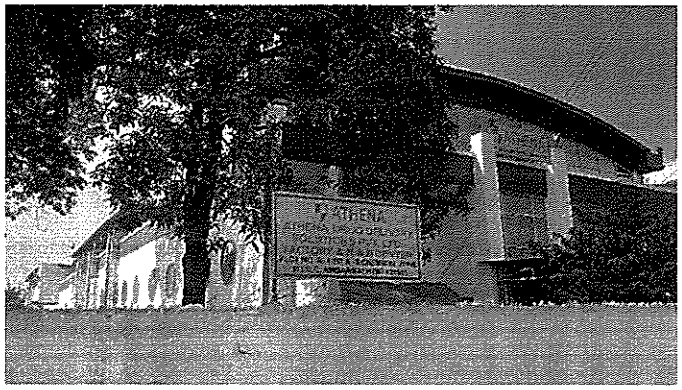
Date of joining :- 19th December 2023.

Date of Completion :- 28th December 2023.

Duration :- 60 + hours.

One Job Training At Athena Drug Delivery Solution Pvt. Ltd.

The following report documents my on-the-job training experience at Athena Drug Delivery Solution Pvt. Ltd. where I spent over 60+ hours gaining practical insights into the Quality Control (QC) and Microbiology departments. As a part of new NEP syllabus in 2nd semester we were told to perform a on job training at any life science related institutes, companies, labs ,etc were we can complete our training and this training provided me with invaluable hands-on experience in a real-world laboratory setting.



Athena Drug Delivery Solutions Pvt Ltd in Ambernath, Mumbai is known to satisfactorily cater to the demands of its customer base. The business came into existence in 2015 and has, since then, been a known name in its field. It stands located at Al & A5, MIDC, Chemical Zone, Near lon Exchange Company, Ambernath-421501. MIDC, Chemical Zone, Near lon Exchange. Athena Pharmaceutiques, manufacturing and licensing out company for Oral Solid dosage forms. For a decade now, Athena has been dedicated to developing lifecycle products and has developed a

broad range of technology platforms for oral delivery with a special focus on modified-release formulation. Using these technologies Athena has developed a wide range of products in various therapeutic segments like Pain, CNS, Cardiovascular, Diabetes, Orphan drugs, Corticosteroids, Gynecology, and Gastroenterology.

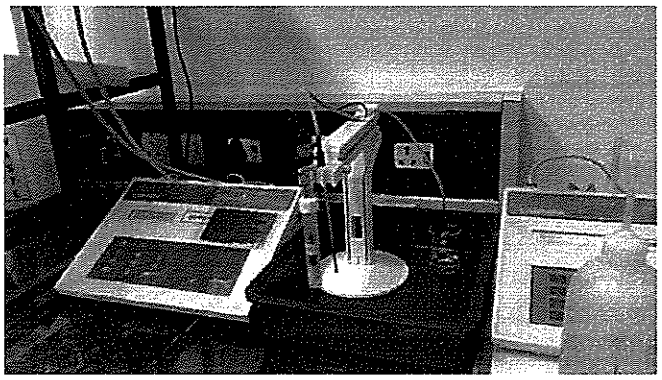
At Athena Pharmaceutical my training starts for QC department. Quality Control (QC) department plays a critical role in verifying the quality of raw materials before they are used in production. In QC department I came to know about the raw material approval process first receipt of raw materials from suppliers is received which is called as Good receipt note. The GRN includes details such as material name, supplier information, quantity received, batch number, and date of receipt. The received raw materials undergo initial quality checking to verify their identity, purity, and compliance with established standards. At this stage I came to know various advanced instruments such as

Heating Mental :-

It heats the liquid at a specific temperature. Normally heating Mental in qc labs for heating the buffer and distilled water at about 40-50°c.

PH Calibrator :-

It calibrates the accuracy of the PH and based on the standard pH of the buffer, it is used to check whether the pH is same or it differs from the standard values.



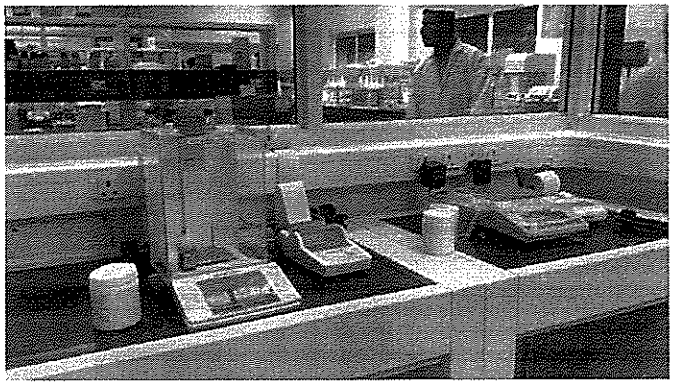
Dissolution Tester :-

This instrument is used to dissolve the drug in the same time duration as the drug / medicine is dissolved human body. It includes

8 chambers containing TBE buffer in each chamber of about 900 ml each.

Weighing Room :-

Weighing Room of Qc department is used for accurately weight the chemical as small as 0.001 to 100 grams. This analytical balance is attached to the slip printer which gives the weighting amount print on the slip essential for further documentation.



Concentratic acid hood:-

It is a specific area where all the concentratic chemicals are kept following the safety and all the work related to this chemicals is done in this place to avoid accidents.

If the initial quality checking reveals no issues or discrepancies, the raw materials are subjected to rechecking by QC analysts. If the rechecking process confirms that the raw materials meet all quality specifications and standards, they are approved for use in production.

Overall it was a good experience and I am thankful to Athena Drug Delivery Solution Pvt Ltd for giving me the Opportunity to work there.

I Would like to express my sincere gratitude to the management and staff of Athena Drug Delivery Solution Pvt. Ltd. For their support and guidance throughout the training program. Special thanks to Mrs. Riddhi Qc associate for their mentorship and Ms. Swati QC Head and Mrs. Prakash Qc deputy head for their timely guidance and encouragement during my tenure at the company.

Reported By –

Aniket Mhase.

Aniket Nhase
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Report on Karyotyping .

Karyotyping is a diagnostic procedure used to examine chromosomes within cell samples, aiding in the Identification of genetic abnormalities underlying disorders or diseases. This method, applicable to a wide range of tissue types, involves culturing the sample in a laboratory setting to promote cell growth. Subsequently, cells from the culture are extracted and stained, allowing for microscopic analysis of chromosome size, shape, and number. The resulting visual representation, known as a karyotype, provides valuable information for diagnosing genetic conditions.

Karyotyping serves various purposes, including the detection of genetic disorders, assessment of chromosomal abnormalities, and understanding genetic conditions. It is commonly utilized in prenatal testing, cancer diagnosis, and clinical genetics.Analyzing chromosomes using traditional cytogenetic techniques requires cells with actively dividing chromosomes, typically observed during metaphase of cell division. Specimens containing spontaneously proliferating cells include bone marrow, lymph nodes, solid tumors, tissue biopsies, amniotic fluids, and chorionic villi. To ensure accurate results, peripheral blood samples should be collected in sterile syringes or vacuum tubes containing preservative-free sodium heparin and processed within 24 hours of collection. Samples should be stored at room temperature or refrigerated above 4°C until processing to avoid temperature extremes. Repeat sampling may be necessary if sample handling requirements are not met.

For bone marrow aspirates, collection should occur in sterile syringes or vacuum tubes with preservative-free sodium heparin and processed immediately to prevent cell death. Amniotic fluid specimens can be collected from 10 weeks of gestation until term, with 15 to 30 milliliters obtained under sterile conditions and transported at room temperature, avoiding prolonged exposure to temperature extremes during transport.

Various growth media are utilized for cell culture, tailored to specific cell types and applications. Examples include AmnioMAX™, Chang medium, and Amniochrome for amniocytes, and giant cell tumor-conditioned medium for malignancies. PANDIS is employed for breast tumors, while other media such as RPMI 1640 and MEM are suitable for a wide range of cell types.These culture media consist of balanced salt solutions supplemented with additives like salts, glucose, and buffering agents to maintain optimal pH levels. Phenol red serves as a pH indicator, turning yellow if the medium becomes too acidic and pink or purple if it becomes too basic. L-Glutamine, an essential amino acid for cell growth, must be stored frozen to prevent breakdown into D-glutamine, which cells cannot utilize effectively. It is recommended to add L-Glutamine to the culture medium just before use.Serum, particularly fetal bovine serum (FBS), is

essential for robust cell growth, typically supplemented in culture media at concentrations ranging from 10% to 30%. Microbial inhibitors such as penicillin/streptomycin, kanamycin, and gentamicin are commonly added to culture media to inhibit the growth of microorganisms.

Certain cells, like mature lymphocytes, require stimulation to undergo cell division. Phytohemagglutinin (PHA), derived from red kidney beans, is commonly used to stimulate division primarily in T-lymphocytes. These changes are further categorized into euploidy and aneuploidy. Euploidy occurs when an organism gains or loses one or more complete sets of chromosomes, altering the ploidy number (e.g., triploid, tetraploid). In contrast, aneuploidy involves the gain or loss of individual chromosomes, leading to conditions like trisomy (2n + 1) or monosomy (2n – 1). In humans, euploidy conditions are not viable due to significant abnormalities, while aneuploidy conditions, such as Down syndrome, Klinefelter syndrome, and Turner syndrome, are more common.

Structural aberrations entail changes in chromosome structure, including deletions, duplications, and rearrangements (inversions and translocations). These alterations occur when chromosomes break and rejoin in different combinations. Trisomy, characterized by an additional chromosome copy, manifests in conditions like Down syndrome, Edward syndrome, and Patau syndrome. Changes in sex chromosome constitution lead to disorders such as Turner syndrome (monosomy X – XO) and Klinefelter syndrome (XXY).

Numerical aberrations may not affect all individuals equally, with milder symptoms often attributed to mosaicism, where only a subset of cells carries the aberration. The presence of normal cells mitigates symptom severity, and symptom variability depends on the affected organ's cell composition. Chimerism, akin to mosaicism, involves different cell lines originating from distinct zygotes.

Structural aberrations encompass deletions, duplications, translocations, and inversions, including isochromosomes and ring chromosomes. Deletions and duplications (unbalanced changes) primarily contribute to abnormal phenotypes like Cri-du-chat syndrome and Charcot-Marie-Tooth disorder. Balanced rearrangements, such as translocations and inversions, do not directly cause abnormal phenotypes as they do not involve gene loss or gain, but may lead to deletions and duplications in subsequent generations.The banding technique is utilized to Identify chromosomes and detect structural abnormalities within the chromosome set. Chromosome identification relies on morphological features such as relative length, arm ratio, and the presence of secondary constrictions on chromosome arms. On banded chromosomes, alternating darkly stained or brightly fluorescent transverse bands (positive bands) and lightly

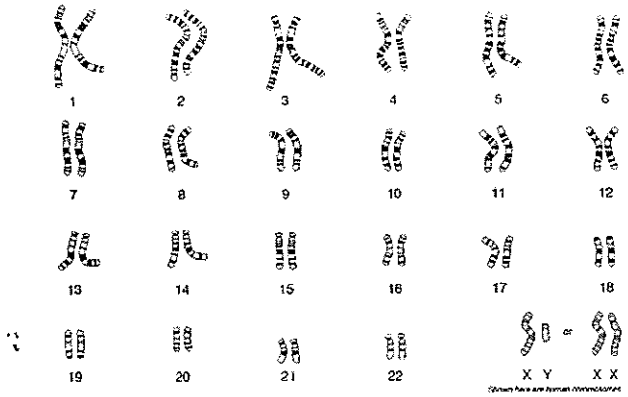
stained or less fluorescent bands (negative bands) are observed. These bands are consistent, reproducible, and species-specific, aiding in chromosome pair identification. Three banding techniques distribute bands along the entire chromosome length: Giemsa banding (G-banding), quinacrine banding (Q-banding), and reverse banding (R-banding).

In cell culturing, blood samples are collected in sterile tubes, followed by the addition of RPMI 1640 culture medium, fetal bovine serum (FBS), and phytohemagglutinin (PHA) to induce mitosis. The tubes are then incubated at 37°C for 70 hours. Subsequently, colchicine is added to arrest cells in metaphase, followed by further incubation for 1 hour. The tube is then centrifuged, and potassium chloride (KCl) is added to disperse chromosomes via osmosis. After incubating at 37°C for 20 minutes, the tube is centrifuged again, and a fixative solution (1:3 glacial acetic acid: methanol) is added to the pellet. The tube is refrigerated overnight, and the next day, it is centrifuged, washed with fixative, and the pellet Is mixed thoroughly. The mixture is then dropped onto a cold slide and heated on a hot plate to dry. The slide is stained with Giemsa stain (G-banding), and chromosomes are examined under a microscope.

I would like to express my gratitude to Dr. Posam for their guidance and support during this training period. Their expertise and encouragement have been invaluable in enhancing my laboratory skills and knowledge of chromosome abnormalities and tissue culture basics.

Reported By –

Aniket Mhase.



Human Chromosomes