

**DCT's Dhempe College of Arts and Science  
Department of Biotechnology**

**Report**

**Event: Field Trip**

**Date: 27<sup>th</sup> September 2024**

On 27<sup>th</sup> of September 2024, the T.Y. B.Sc. students (33 students: 4 Males and 29 Females) of the Department of Biotechnology at Dhempe College of Arts and Science were taken on a field trip to the Goa Dairy Industry in Ponda and VerGo Pharma Research Private Limited (VerGo Clinicals) in Corlim. The students were accompanied by Assistant Professors, Dr. Manasi Pawaskar and Dr. Reshma Zakane. These visits were an integral part of their curriculum, specifically for the subjects Food Biotechnology and Bioanalytical Tools, and was conducted under the DBT Star College Scheme. Following were objectives of the field visits:

1. To provide students with practical exposure to the processes and operations of the dairy and a pharmaceutical industry.
2. To observe the application of bioanalytical instruments.
3. To understand the quality control measures and testing procedures used in the dairy industry for ensuring milk safety and compliance with industry standards.
4. To enhance students' understanding of how theoretical knowledge from the subjects *Food Biotechnology* and *Bioanalytical Tools* is applied in real-world industrial settings.

Located in Corlim, Goa, VerGo Pharma is a leading Contract Research Organisation (CRO) providing innovative drug development solutions to global pharmaceutical industry. It began its operations in 2013 and currently has various labs and clinical units for clinical research studies. They have various departments such as the clinical units, cold rooms (for maintaining samples), ICU (to manage any medical emergencies), storage rooms, data management, project management and the bioanalytical department etc.

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Teacher In-charge

Dr. Reshma Zakane

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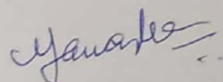
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Upon arriving, a brief overview of the activities conducted in the company and their functioning was given by Dr. Sumanlata Awasthi, Principal investigator at VerGo Pharma. She explained the various kinds of studies conducted for drug testing like pharmacokinetic and steady studies as well as the type of dosage forms. She also mentioned that the healthy volunteers between the ages of 18-45 years are considered for the studies. She told how they focus on bioavailability and bioequivalence studies which assess how well a drug is absorbed in a healthy individual and how it performs in comparison to other drugs, while also ensuring the drug's safety and efficacy before being marketed.

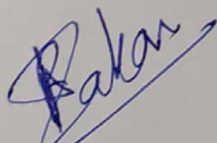
This was followed by a visit to the Bioanalytical department to observe the instruments and their working. Here they perform extraction from various bio samples taken from the volunteers, like matrix followed by storage in the deep freezer and documentation that is done based on SOPs. Following this, briefing of the HPLC (High Performance Liquid Chromatography) machine and LC/MS-MS, which is Liquid Chromatography- Mass Spectrometry, connected to each other was given which are used for measurement of drug concentration and analysis of bio samples with high specificity. There were also certain areas where highly light sensitive samples were being worked with which was very interesting to watch. Finally, a brief Q&A session was conducted by HR head, Mr. Kashinath to clear all our queries. This field trip provided a great opportunity to observe real world setting of how a clinical research organization works and the role played by bioanalytical tools in the same.

Next, visit was to a dairy known as the Goa State Cooperative Milk Producers Union, which was established in 1971. It is a modern dairy plant having a capacity of 110000L/day and supplies 95,000L of milk to the people from urban, semi urban and rural areas. The milk is sourced exclusively from cows bred in Goa. Upon arrival, we were welcomed by Mr. Priyesh Sawant who guided us throughout the visit. At the beginning an overview of the plant's operations and the dairy industry in Goa was given from visitor's area. This included information about the various societies that supply milk collected from buffaloes and cows to the plant. The milk brought in from all the societies then goes through a rigorous quality tests and sterilization process to ensure that the milk is on par with industry standards before it is packed and distributed across the state. The facility has multiple tanks in place for storage, pasteurization, cooling and machines for packing milk. After the pasteurization process is completed, the milk is cooled using the bulk milk cover tanks and is packed in food safe packaging materials. The dairy plant produces four different types of milk based on the fat composition- full cream milk, standard milk, cow milk, and toned milk, which all come in different volumes. To ensure proper maintenance of hygiene, the tanks are washed and sterilized before and after every shift so that all the remnants of milk from the previous batch are cleaned off. The process helps reduce wastage of milk and also does not allow the introduction of unwanted particles and biological entities into fresh milk.



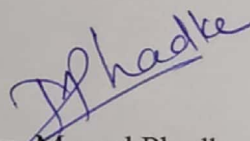
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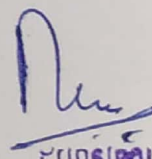
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This was followed by the visit to the quality assessment lab where the head of the section, Mr. Prasad Kholkar, gave a detailed explanation of the various quality testing procedures carried out by the industry. Information about the physical tests such as smell, texture, odor, and clot on boiling test was provided that detects abnormalities in the milk samples. Chemical analysis of the samples is carried out using the FT1 Milkoscan analyzer that can detect almost 27 adulterants along with various constituents of the milk including ions, vitamins etc. This test takes less than a minute and saves plenty of time and the sample required for the analysis. The tour ended with a short question and answer session followed by the distribution of flavoured milk as refreshments, which were generously provided by Goa dairy. The trip was informative and helped us gain a deeper understanding of various aspects of the milk industry.

Overall, this field trip helped the students gain a deeper sense about the functioning of both pharmaceutical and dairy industries. Following were the outcomes of these visits:

1. Students gained hands-on experience in understanding the processes involved in milk processing, pasteurization, testing and packaging at the Goa Dairy Industry.
2. The visit to VerGo Pharma allowed students to observe various instruments that are utilized for bioanalytical analysis.
3. The field trip deepened the students' appreciation for industrial quality control, both in food production (dairy) and in pharmaceutical research, emphasizing the importance of precision, safety, and efficiency in these sectors.

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