



DCT's
Dhempe College of Arts and science,
Miramar-Goa

Report on Industrial field visit under DBT Star College Scheme

Place of visit: Innovio Biosystems LLP, Verna Goa and Goa Dairy, Curti Ponda

Date & time of visit: 14th September 2023; 10:00am - 5:00pm

Faculty In-charge: Dr. Preethi Pandit, Dr. Niyati Pandurang Hede

No. of beneficiaries: 35 students (08 males & 27 females)

A field trip was organised to Innovio Biosystems LLP, Verna Goa and Goa Dairy, Curti Ponda, for the students of T.Y. B.Sc. Biotechnology on the 14th September, 2023, from 10.00 am to 5.00 pm. The students were accompanied by the faculties in-charge, Dr. Preethi Pandit and Dr. Niyati P. Hede. These industrial visits were organised, as the part of the practical component in the syllabus of Biotechnology, under Star College Scheme was initiated by DBT.

Our first stop was Innovio Biosystems, a leading company specializing in the manufacturing and exporting microbiology culture media. Mr. Roshan Savant, the Director of Innovio Biosystems, warmly welcomed our group and delivered an informative talk about the company's history, mission, and core values. Mr. Savant guided us throughout the visit. Mr. Savant emphasized the company's commitment to maintaining the highest standards of quality and precision in microbiology product manufacturing.

We were directed into a non-classified area wherein a few of the employees were checking for any microbial growth on the manufactured media plates by holding them against a lamp followed by manually packaging them into a 3-sleeve packaging. This process was repeated for the bottled broths as well.

We were also shown the different equipments used in the regular working of the plant such as the raw material storage unit, autoclave, hot air oven, laminar air flow chamber, powder media production chamber, dehumidifier and peristaltic pump. Mr. Sawant explained that the company catered to production of powder, liquid and plate media along with antibiotic resistance tests and accessory items such as plastic loops, plates and spreaders with the main aim of reducing bioburden. Bioburden could be reduced by various methods such as installation of filters or air handling units (AHU) for appropriate ventilation depending on their classification (Class A, B, C, D). Another sterilization method was the use of gamma rays emitted from an iodine isotope to reduce contamination during packaging.

We were also educated about the media preparator, a device that integrates the preparation, sterilization, cooling and packaging of culture media which allows for fast and mass production. We were introduced to different types of agar media such as the *tryptone-casein agar* used in industries.

Finally, we learned about the risk management protocols carried out to ensure contaminant-free products. The tour ended with a short Question and Answer session. We express our gratitude to Mr. Roshan Savant and the staff at Innovio Biosystems for their warm hospitality and informative talk. This field trip was an enriching experience that will undoubtedly benefit students in the academic and professional growth. The visit concluded with a group photograph taken in the premises of the institute.



In the afternoon, we visited Goa Dairy at Curti Ponda, a prominent dairy processing facility. This visit provided valuable insights into the dairy industry and its role in supporting the local economy.

Mr. Uday Gad from the Marketing division and Mr. Ravindra Pawar, welcomed us at the visitors' area and gave an in-depth briefing on working of the plant, how milk is analysed and processed. Raw milk from cows and buffaloes, sourced from various farmers across the state, is brought in twice a day (one in the early morning and then in the evening). The process begins with testing of the incoming raw milk for any contamination after it is received from the farmers and before it is sent to the further processing unit. Goa Dairy follows both the traditional and automated methods for quality control of milk. He stated that milk is tested at two stages by the tests such as MBRT and Resazurin test. The first test occurs at the panchayat/village level and the second test occurs at the Dairy factory. He further briefed us about Milko Scan™ FT1 Analyzer for milk, which is an instrument used to check for many parameters including adulterants. The milk, once collected and checked, is stored in large cooler tanks which is then piped down into the pasteurization tank. Once completely pasteurized, this milk is stored in separate tanks before it is sent for packaging. After testing, the milk is then pumped to the coolers followed by the Pasteurization process. He stated that the Dairy takes immense care and even conducts phosphatase tests to determine the efficiency of the pasteurization process. The milk is then cooled, packaged and sent in vehicles for distribution.

Milk contains significant amounts of saturated fat, protein and calcium as well as vitamin C. He also emphasized on different products manufactured by the unit and how the requirements. According to the fat content, the milk is categorized into 4 major types: the orange packet (6% fat, 9% SNF -solids not fat), the pink packet (3.5% fat, 8.5% SNF), the green products manufactured are lassi, curd, flavoured milk, ghee, butter, Shrikhand etc. We were able to watch the completely automated packaging of the blue milk packet. An adulteration detection machine is used to check for adulteration. Once a batch of milk is packaged, the tanks, piping and other machinery are thoroughly washed using sterile water and caustic soda for the next batch.

The students were later shown around the Dairy via the visitor's area wherein we got to observe the packaging machine, cooling tanks, pasteurization tanks, control samples stored in a fridge, incubator and the Microbiology lab. The visit concluded with a group photograph taken in the premises of the institute.



Overall, it can be concluded that both the trips were a success and such field visits definitely help bridging the gap between academia and industries.

Teachers' In-charge

(Dr. Preethi Pandit and Dr. Niyati P Hede) In-charge, Dept. of Biotechnology)

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