INDUSTRY VISIT TO BIOCON SDN. BHD. : WHERE BIOTECHNOLOGY MEETS DIGITAL INNOVATION

ISKANDAR PUTERI, JOHOR

Image Resources: https://www.biocon.com/more/biocon-malaysia/

COMPANY BACKGROUND

Biocon Sdn. Bhd. is a global biopharmaceutical company which is in Iskandar Puteri, Johor. The company is a main manufacturing facility that focuses on the development and manufacturing of biological products, especially for human insulin and insulin analogs. In 2022, the company was recognized as the first and largest complete insulin manufacturer in Malaysia.

Besides that, the aim of the company is to produce high-quality and affordable biopharmaceutical products for diabetes patients across the global by using modern laboratory facilities and automated manufacturing operation systems.

In the pharmaceutical and biotechnology industry, Biocon should ensure the quality and safety standards of insulin products when supplied to global markets. So that, Biocon also known as one of the leading global manufacturers of insulin.

Other than that, Biocon important in the control of chronic diseases such as diabetes mellitus and improves global and regional healthcare systems through providing affordable healthcare products.

INTRODUCTION

On 23rd December 2025 (Tuesday), a group of Bioinformatics and Network & Security students from the Technology and Information System (SECP1513) course of Universiti Teknologi Malaysia (UTM) participated in an industrial visit to Biocon Sdn. Bhd. in Iskandar Puteri, Johor.

Through this industry visit, the students had the opportunity to be exposed to the industry and improve their understanding of how biotechnology and information systems are interconnected in pharmaceutical manufacturing environments.

OBJECTIVES OF THE INDUSTRY VISIT

- Provide a chance for students to have an experience expose to biotechnology manufacturing operations system in a field of pharmaceutical.
- Strengthen understanding of the role of information systems, automated system, and data control in assisting biological processes.
- Observe the research in laboratory can transform into commercial pharmaceutical products to the global market.
- Increase the awareness of collaboration between different fields which are biotechnology, bioinformatics, information technology and digital systems.

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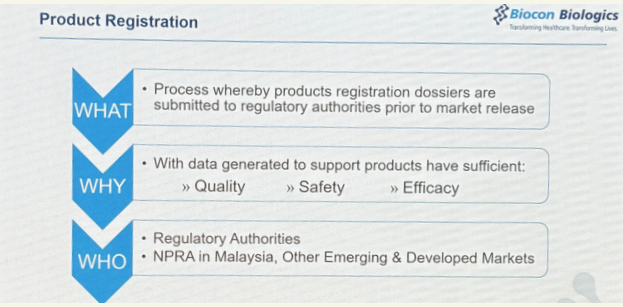
BIOTECHNOLOGY OPERATIONS OBSERVED

During the industrial visit to Biocon Sdn Bhd, students observed biotechnology operations involved in the production of biopharmaceutical products such as insulin. The manufacturing process begins at the laboratory level and is later scaled up for commercial production under strictly controlled conditions.

A key observation was Biocon's strong emphasis on safety, cleanliness, and Standard Operating Procedures (SOPs). Cleanroom environments and protective equipment are used to prevent contamination and ensure product quality. Continuous quality testing and validation are conducted throughout the production process to meet regulatory and healthcare standards.



LAB-TO-MARKET TRANSLATION

Biocon has a world class lab-to-market capabilities from development to commercial similar biological medicinal product manufacturing and marketing. In Malaysia, the commercial scale facility produce insulins after research and all around development. Biocon's products will undergo validation and global regulatory approvals, such as the U.S. FDA, EMA and NPRA. Biocon has a strong quality systems which produce consistent quality products. Biocon also has end to end traceability from drug substance to finish insulin products.

ROLE OF COMPUTING AND INFORMATION SYSTEM

The visit showed the role of computing and information systems really important in supporting Biocon's biotechnology processes. Computer-assisted manufacturing systems are used to monitor and control production activities to ensure the efficiency and accuracy.

Biocon also utilizes resource planning, databases, and quality control systems to manage production data, inventory, and testing records. Automated monitoring systems and sensors help detect machine issues early and support maintenance activities. This integration of computing, data management, and automation plays a crucial role in ensuring consistent product quality and smooth large-scale manufacturing.

INTEGRATION OF COMPUTING,NETWORKS AND BIOLOGY

Biocon supports manufacturing processes by using digitalization in quality and compliance systems. Other than that, Biocon ensures a real time tracking and traceability across large scale biologics production by using networking and data flow. In biological manufacturing, they use digital quality systems to improve the efficiency and compliance of process.

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SKILLS AND KNOWLEDGE DEVELOPMENT

Throughout the visit, we observed various technical skills applied in the R&D environment and production of drug products, including laboratory data recording, research documentation, automation system and the use of digital systems in managing experimental data. We also learned about the importance of data integrity, traceability, and adherence to standard operating procedures (SOPs).

In addition, the visit highlighted the significance of soft skills such as effective communication, teamwork, and professionalism. Clear coordination among departments is essential to ensure smooth research operations and compliance with industrial standards. The visit also increased our awareness to industrial standards and best practices, especially in maintaining safety, quality control, and regulatory compliance within a biotechnology R&D and production of drug products facility.

RELEVANCE TO ACADEMIC STUDIES & CAREER

Our visit to the Biocon's R&D site and drug product site helped us relate theoretical knowledge from our academic coursework to real-world applications. Concepts such as data analysis, system integration, and process optimization were clearly demonstrated in the industrial research environment.

This exposure broadened our career awareness by introducing potential career paths in biotechnology, bioinformatics, data analytics, and industrial computing. The visit encouraged us to consider careers that integrate technology with life sciences, especially in research-focused industries.

KEY LEARNING OUTCOMES

During our industrial visit to Biocon Sdn. Bhd., particularly the Research and Development (R&D) site and drug product site, we gained valuable insights into how biotechnology research is conducted in a real industrial setting. The visit enhanced our understanding of how scientific research is translated into practical products that meet industry and healthcare demands. We also learned how computing concepts, such as data collection, data management systems, automation, and digital monitoring are applied in biotechnology research. These technologies play a crucial role in ensuring accuracy, efficiency, and compliance with strict regulatory requirements.

CONCLUSION

In conclusion, the industrial visit to Biocon's R&D site and drug product site was a highly beneficial experience for our group. It provided meaningful exposure to industrial biotechnology research and demonstrated how computing technologies support innovation and operational efficiency.

The visit emphasized the importance of industry exposure for students in bridging the gap between academic learning and professional practice. Overall, this experience significantly enriched our understanding of the biotechnology industry and its real-world applications.

ACKNOWLEDGEMENT

In conclusion, the industrial visit to Biocon Sdn. Bhd. brought us an extremely valuable and enriching experience. The visit provided meaningful exposure to real-world biotechnology research and demonstrated how computing technologies are integrated to support innovation, efficiency, and regulatory compliance in the industry. This visit was made possible through the guidance and initiative of Dr. Azurah Binte A Samah, through her efforts in organizing and leading the visit, allowed us to gain first-hand industry experience. Her dedication in bridging academic learning with industrial exposure greatly enhanced the value of this visit.

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