

REPORT

Virtual training on “Insights into ACG’s Oral Dosage Technology”

Organized by: IQAC Cell, IPA MSB’S Bombay College of Pharmacy, Autonomous

Industry Partner: ACG-Sci-Tech

Date: 28 July 2026 from 10:30 am to 4:30 pm at BCP

Participants: Third Year B. Pharm Students & Staff members.

Introduction

As part of the Institute’s Industry–Academia initiative and IQAC activities, Bombay College of Pharmacy organized a one-day Industrial Training Programme on “Insights into ACG Oral Solid Dosage (OSD) Technologies” in collaboration with ACG. The programme was designed to provide students with exposure to current pharmaceutical manufacturing technologies, quality systems, packaging innovations, digital transformation, and Good Manufacturing Practices (GMP). The sessions were delivered by experienced industry professionals who shared practical knowledge through presentations, demonstrations, and interactive discussions.

Objectives

The objectives of the programme were:

- To familiarize students with modern pharmaceutical manufacturing technologies.
- To understand the manufacturing process of capsules and tablets.
- To provide knowledge on pharmaceutical packaging materials and barrier technologies.
- To introduce serialization, track and trace, and vision inspection systems.
- To create awareness about Industry 4.0 technologies in pharmaceutical manufacturing.
- To reinforce the importance of Good Manufacturing Practices (GMP) and quality assurance.

Programme Summary

The programme commenced with **Dr. Parizad Elchidana** ACG-Principal Technical Consultant an introductory session highlighting ACG's contribution to the global pharmaceutical industry in the areas of capsule manufacturing, pharmaceutical equipment, packaging solutions, and digital technologies. Welcome Address followed by a welcome speech from Bombay College of Pharmacy by **Dr. Shubhangi Aher**. The speakers emphasized the importance of connecting academic learning with industrial practice.

Dr. Jnanadeva Bhat delivered a comprehensive lecture on the manufacturing of hard capsules. The session covered capsule shell composition, the use of Gelatin and Hydroxypropyl Methylcellulose (HPMC), capsule manufacturing processes, printing technologies, quality evaluation, common manufacturing defects, and packaging. The advantages of HPMC capsules for moisture-sensitive and vegetarian formulations were also discussed.

The next session by **Ms. Dorene Almeida** focused on recent innovations in hard capsule technology. She explained the challenges associated with various oral dosage forms and discussed liquid-filled hard capsules, viscosity considerations, selection of excipients, capsule sealing techniques such as band sealing and Nest technology, and advanced filling equipment including SAL-11000 and FluidoCap F-70.

Mr. Prashant Pisal explained the major pharmaceutical equipment used in Oral Solid Dosage (OSD) manufacturing. The session covered roller compactors, high-shear mixers, fluid bed processors, tablet coating systems, tablet compression equipment, containment technologies, and blister packaging systems. He also highlighted ACG's commitment to strengthening industry-academia collaboration through training programmes for students and faculty members.

During the afternoon session, Mr. Abhay Joshi presented an informative lecture on pharmaceutical packaging films and barrier technologies. He explained the importance of selecting packaging materials based on product stability and environmental conditions. Different packaging materials such as PVC, PVDC-coated PVC, Aclar laminates, and Cold Form (Alu-Alu) blister packs were discussed with reference to moisture, oxygen, and light barrier properties. Concepts such as Water Vapour Transmission Rate (WVTR), Oxygen Transmission Rate (OTR), sustainability, anti-counterfeiting features, regulatory compliance, and formulation-specific packaging selection were also explained.

Mr. Ibad Bahure delivered a detailed presentation on Track and Trace Systems and Vision Inspection Technologies. The session introduced serialization, aggregation, and the packaging hierarchy from primary packaging to pallet level. He explained Level 1 to Level 4 serialization architecture, GS1 standards, and global pharmaceutical regulatory requirements. The session also covered the Government of India's QR code initiative for selected pharmaceutical products and demonstrated how consumers can verify product authenticity. Vision inspection systems employing artificial intelligence and high-speed cameras for detecting missing tablets, broken products, packaging defects, barcode verification, OCR inspection, and pinhole detection were also demonstrated.

Ms. Purbasha Banerjee explained ACG's Digital Transformation initiatives through Industrial Internet of Things (IIoT), Cloud Computing, Artificial Intelligence, Machine Learning, and Big Data Analytics. The session demonstrated how machine data are collected through smart gateways, transmitted securely to cloud platforms, analysed, and presented through web and mobile dashboards. Concepts such as Overall Equipment Effectiveness (OEE), predictive maintenance, condition monitoring, root cause analysis, preventive maintenance planning, and real-time machine monitoring were discussed, highlighting the importance of digital technologies in improving operational efficiency.

The final technical session was delivered by **Mr. Shashikant Joag** on Good Manufacturing Practices (GMP), Current GMP (cGMP), and Personal Hygiene. He explained the historical development of GMP, regulatory requirements, quality systems, documentation practices, validation, CAPA, and the ten principles of GMP. The session also emphasized personal hygiene, scientific hand washing, cleanroom behaviour, gowning procedures, contamination control, and the proper use of personal protective equipment. The importance of maintaining product quality through disciplined manufacturing practices and employee responsibility was strongly emphasized.

The program is concluded vote of thanks by Ms. Pranita Bhangare .

Learning Outcomes

The programme enabled students to:

- ❖ Understand the complete manufacturing process of capsules and tablets.
- ❖ Gain knowledge of modern pharmaceutical equipment and packaging technologies.
- ❖ Learn the principles of pharmaceutical packaging material selection based on barrier properties.
- ❖ Understand serialization, track and trace systems, and vision inspection technologies.

- ❖ Develop awareness of Industry 4.0 applications, including IoT, Artificial Intelligence, and predictive maintenance in pharmaceutical manufacturing.
- ❖ Appreciate the importance of GMP, documentation practices, contamination control, and quality assurance in pharmaceutical industries.
- ❖ Recognize the significance of industry–academia collaboration in enhancing professional competence.

Conclusion

The Industrial Training Programme provided valuable exposure to current pharmaceutical manufacturing practices and advanced technologies employed in the Oral Solid Dosage (OSD) industry. The programme successfully integrated theoretical concepts with practical industrial applications, thereby enhancing students' technical knowledge and professional understanding. The interactive sessions delivered by experienced ACG professionals offered meaningful insights into pharmaceutical manufacturing, packaging, digitalization, quality systems, and regulatory compliance.

The programme concluded with a formal Vote of Thanks expressing sincere appreciation to the resource persons from ACG, the management and faculty of Bombay College of Pharmacy, and all participants for their valuable contribution towards the successful conduct of the programme. The training proved to be highly beneficial and aligned with the objectives of the Institute's IQAC in promoting experiential learning and strengthening industry–academia collaboration.