

# Increasing Student Participation and Theory Application in Pharmaceutical Technology Lectures

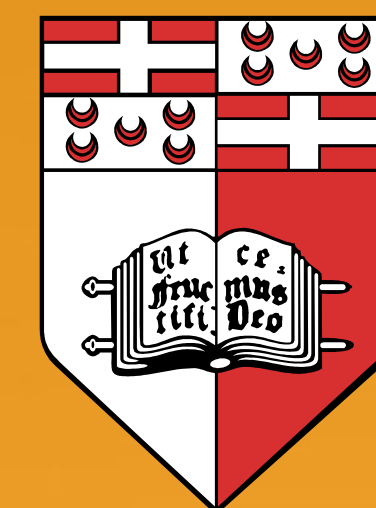
Nicolette Sammut Bartolo\*, Janis Vella, Anthony Serracino-Inglott, Lilian M. Azzopardi

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Msida, Malta

email: nicolette.sammut-bartolo@um.edu.mt



Department of Pharmacy



University of Malta

## INTRODUCTION

The application of theory in practical scenarios enhances the learning process and makes it more enjoyable and stimulating for students. The Bachelor of Science (Honours) degree in pharmaceutical technology was launched by the Department of Pharmacy at the University of Malta in 2011. Within this course two study units dedicated to aspects of pharmaceutical processes in production, namely active pharmaceutical ingredients manufacturing and production and operations management, were developed. The introduction of a presentation within these two study units is thought to increase the participation of students during lectures and enable them to understand better the material covered during lectures.

## AIMS

To introduce a class presentation related to a real case scenario for each study unit, to increase student participation and to promote the application of the theory learned during lectures

## METHOD

Theoretical material covered during lectures for modules on production of active pharmaceutical ingredients (APIs) and production and operations management was reviewed.

A case presentation was developed for each study unit reflecting the material covered during lectures. Students were divided into groups and each student was assigned a separate task which had to be presented to the class.

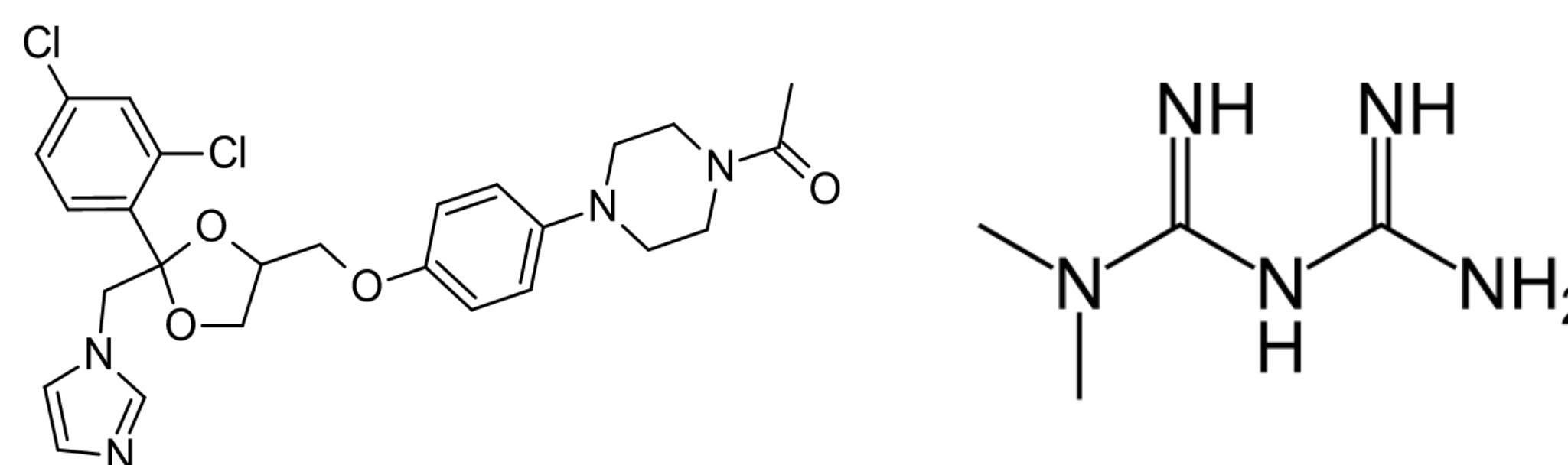


Figure 1: The chemical structure of ketoconazole (left) and metformin (right), two of the assigned drugs for the presentation of the study unit on the production of APIs

## RESULTS

For the **Production of APIs** study unit, students were divided into groups and assigned a drug. The tasks allocated for each group were to:

Research different synthetic methods available for the assigned drug

Describe each step of the synthetic pathway

Highlight the role of each reaction component

Describe the reaction conditions used (e.g. temperature, pH, duration)

Give a description and rationale of purification methods used

Compare the different synthetic methods, highlighting the pathway which gave highest yield

For the **Production and Operations Management** study unit, each group represented a pharmaceutical company which produces solid oral dosage forms. The tasks assigned for each group were to:

List the equipment needed for production and to find a suitable equipment to achieve the target production forecasted by the company

Develop a facility layout plan

Prepare a production schedule (taking in consideration the capacity of equipment)

List and suggest equipment which can be used in the Quality Control Laboratory

Prepare a laboratory schedule (taking in consideration the production schedule)

## CONCLUSION

The introduction of tasks which involve the use of theory learned during lectures helps the learning process of students. Development of these case presentations helped students to better understand the theory learned during lectures by applying this knowledge to practice. Research, presentation skills and the skill to work as a team were also developed. These skills can be applied to other modules and may also be useful in the students' future professional career.