

# Abstract

Charles University, Faculty of Pharmacy in Hradec Králové

Department of: Pharmaceutical Technology  
Supervisor: doc. PharmDr. Zdeňka Šklubalová, Ph.D.  
Consultant: Dr. Pawel Stasiak, Ph.D.  
Student: Mehrdad Mirzaei  
Title of Thesis: **Study of coating mixture composition on quality of tablet coat**

The objective of this study is to develop a titanium dioxide-free coating for pharmaceutical tablets. Therefore, the study focuses on the impact of coating mixture composition on the quality of tablet coats, utilizing two placebo core types: standard convex-shaped (lenticular) and flat-shaped, both 9 mm in diameter. Two coating compositions were examined: lactose-based and calcium carbonate-based, with an orange colorant and green colorant, respectively. Key parameters assessed included coating process dynamics, coating thickness, tablet crushing force, and disintegration time.

The study found significant differences in the mechanical properties and performance of tablets based on the core shape and coating composition. Lactose-based coatings provided smoother and more uniform coats regardless of the core shape. Additionally, the type of core influenced the crushing force and disintegration time, with flat-faced cores exhibiting better mechanical strength but longer disintegration times; the higher disintegration time was noted for the lactose coat. The findings suggest that lactose-based coatings are more effective for achieving a high-quality coat compared to calcium carbonate-based coatings, while core shape significantly impacts the tablet's mechanical properties and performance. Finally, both types of green-coated tablets showed less intense darkening due to corrosion compared to the orange-coated tablets, indicating an advantage in terms of visual stability.