Abstract

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Title of the diploma thesis: The effect of chitosan as excipient on dissolution of meloxicam.

The main objective of this diploma thesis was to develop a suitable dissolution method for evaluating the release of meloxicam from capsules and subsequently determining the effect of chitosan as excipient on the dissolution of this drug. The influence of preparation method of mixture in the capsules was also monitored. The mixture consisted of combination meloxicam with chitosan (MX-CH) in a ratio of 1:8, which was prepared by mixing in a Turbula 3D instrument, or by grinding using a planetary ball mill for 5 or 30 minutes. The dissolution was performed in a dissolution device with a paddle. The phosphate buffer with a pH of 6,8 was selected as a medium. Four formulations were tested including capsules filled with drug only and capsules filled with the mentioned mixture (MX-CH). Samples were gradually collected at time intervals and then measured with UV/VIS spectrophotometer.

Based on the measured and calculated values, it is clear, that the excipient chitosan helped to better and faster release of meloxicam from capsules. It was observed that the drug alone was not released even 20% after 60 minutes of testing, while the drug from capsules filled with MX-CH were released completely (100%). It can be stated according to the results that the drug release from the mixture prepared by mixing was immediate after insertion the capsule into the dissolution medium while the delayed onset of five minutes was observed in case of the drug release from the ground mixture. Then it can be seen, that the longer grinding time led to the slower, but more uniform release of the drug.

This thesis also deals with the development of UHPLC method for the determination of meloxicam. Two suitable methods have been partially developed. In the future, their development needs to be finished, and the methods needs to be validated.