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Coated prolonged release minitables with Carbamazepine

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Minitablets (MT) are innovative solid oral forms designed especially for pediatric and geriatric patients with swallowing problems. MT (diameter 1-3 mm) are regarded as a multiple unit dosage forms, same as granules or pellets, where the dose is administered as a variable number of subunits. Multiple unit dosage with controlled release carry lower risk of uncontrolled burst release of the drug. Minitablets are alternative for pellets because of their ease of preparation. Due to the defined sizes, weight and smooth surface minitables are produced in a more reproducible and continuous way. The aim of the study was to develop minitables (2.5 mm cores) with prolonged release, where carbamazepine (CBZ) was a model drug. Modified release was achieved by fluid bed coating. Two series of minitables containing 25% of CBZ were prepared; by direct compression (MT-DC) or by compression after granulation (MT-GR). Rotary tablet press (Erweka RTP-D8, Germany) was used. MT were coated in fluid bed system (Aircoater 025, Innojet) using a mixture of aqueous dispersions of Eudragit RL and RS polymers at various ratios. The dissolution rate was modified by film thickness and addition of pore forming polymers. Prolonged release of CBZ was achieved for MT-GR with 1:1 Eudragit RL/RS ratio (50 µm film thickness), whereas for MT-DC coated with 1:9 Eudragit RL/RS ratio (30 µm film thickness) drug release rate was found optimal. The drug release profiles of MT complied with the USP requirements for prolonged release tablets. Addition of the pore forming polymers (hypromellose, polyvidone) allowed to eliminate the initial delay in the active substance release.

Biography

Maja Szczepańska is a first year PhD student at the Medical University of Gdańsk, Poland. She completed her Master's degree in Pharmaceutical Sciences in 2014. She is working on her PhD thesis at the technology of minitables. The aim of her work is to optimize the coating process of minitables and develop a method for testing the release rate from coated minitables.

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