

Poster Presentation

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Evaluation of Polymorphism Influence in the Finasteride

L. da Silva¹, C. Montanari¹, M. Ângelo¹, E. Cazedey², R. Bonfilio³, M. Araújo¹

¹Federal University of Alfenas, Department of Pharmaceutical Sciences, Alfenas, Brazil, ²Federal University of Bahia, Salvador, Brazil, ³Federal University of Mato Grosso, Sinop, Brazil

Finasteride is a specific competitive inhibitor of steroid type-II 5 α -reductase, an intracellular enzyme that converts testosterone to dihydrotestosterone (DHT) and is widely used for the treatment of benign prostatic hyperplasia (BPH), prostate cancer, and androgenetic alopecia. Polymorphs are known to give rise to significant differences in the physicochemical properties of the compound as melting point, density, morphology, solubility and colour. Thus, proper monitoring of solid-state forms, both qualitative and quantitative, is crucial in order to ensure high-quality products. The crystal structures of finasteride appear in the Cambridge Crystal Structure Database (CSD) under the codes WOLXOK01 and WOLXOK02 for Form I and WOLXOK03 for Form II. In this context, the aim of this work was to study the behavior of the chemical structure and physicochemical properties of polymorphic forms, and to evaluate the possible influence in the dissolution profile and stability of capsules. A stability study was carried out at 50°C for 3 months. The Form II of finasteride was obtained by heating Form I to 235°C for 30 minutes. The techniques X-ray diffraction, infrared spectroscopy and thermal analysis were applied to characterize the Forms. The solubility of finasteride polymorphs was determined by equilibrium solubility method. For the dissolution test, water was used as dissolution medium and the basket apparatus at 100 rpm. The samples were analyzed by HPLC at 210 nm. Differences in X-ray diffraction and infrared spectra of the two polymorphs were observed. The DSC curves showed Form I melting peak at 257°C and solid-solid transformation to Form II at about 230°C. In the solubility study, higher Form II solubility than Form I was observed in most evaluated pHs. The interaction of the Forms I and II with capsule excipients may have been different since the dissolution profile of the capsules showed higher release for Form I. In the stability study, the finasteride content was stable for two Forms, however, the dissolution profile of Form II showed greater decline than Form I. In conclusion, the results show that the dissolution profiles of polymorphism may influence the quality of finasteride capsules, being necessary to have a polymorphic quality control for this dosage form. Acknowledgments: PNPd CAPES and FAPEMIG

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