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CHARACTERIZATION OF ITRACONAZOL ELECTROSPUN FIBROUS SHEETS

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INTRODUCTION

Itraconazole (ITZ) is a poorly water soluble weak base and a potent antifungal drug, used both in dermal and systemic fungal infections [1]. Polymer based solid dispersion, like electrospun nanofibers increase specific surface, thus enhance solubility [2]. ITZ loaded electrospun fibrous sheets were prepared in order to improve API solubility.

MATERIALS AND METHODS

Itraconazole (Acros) was incorporated in polyvinylpyrrolidone - PVP (Plasdone K29/32, ISP Technologies) based fibres. ITR stock solutions were prepared in alcohol – DCM mixture. Electrospinning was applied using the following parameters: 10 cm collector needle distance, 20kV voltage, flow rate of 8ml/min with an eSpin Tube apparatus. Morphology of the fibres (SEM), drug load and comparative dissolution was investigated. DSC and FTIR studies were also conducted.

RESULTS

SEM investigations indicated that fibre diameter is in nanosize range. Drug content was 33.21 ± 0.9 %. Dissolution studies implied comparison with pure drug and a commercially available tablet formulation. Fibres present superior dissolution.

FTIR spectra of fibres show widening and merging of expected characteristic peaks. DSC curves show the crystalline to amorphous transition of ITR due to fibre formation (lack of the sharp melting endotherm at 165oC).

CONCLUSION

ITZ loaded electrospun nanofibers showed an almost complete dissolution of the API proving an improved solubility.

REFERENCES

1. Taupitz T, et al. Eur J Pharm Bio (2013) 83(3):378-87.
2. Sheng S et al. AAPS PharmSciTech (2020) 21(5):199.

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