Cyclodextrin-Based Orally Fast Dissolving Drug Delivery System of Aripiprazole and Its In Vitro Dissolution-Permeation Testing Using µFlux™

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PURPOSE

Different approaches are used to develop the novel oral dosage forms of APIs with poor water solubility. Cyclodextrins are usually used to enhance the dissolution rate of poorly water soluble drugs. This study is to develop an orally fast dissolving drug delivery system of aripiprazole, a second-generation antipsychotic drug, with cyclodextrin-based electrospun formulations. A combination of dissolution and permeation tests were performed on µFlux™ platform to simulate the dissolution in human saliva and the transport through Caco-2 cell monolayers.

RESULTS

Effect of different additives (polymers and cyclodextrins) on dissolution and permeation of meloxicam

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Dissolution of unmelted meloxicam and electrospun formulations

Figure 1: Example of dissolution profile showing for Untreated Meloxicam (a), Soluplus (b), PVPVA 64 (c), and PVPK90/HPBCD (d). Assays were performed in 20 mL of pH 6.8 phosphate buffer containing 0.025 mol/dm^-3 KH₂PO₄.

CONCLUSIONS

The developed electrospun formulations showed promising results in improving the dissolution rate of meloxicam and Aripiprazole. The permeation studies using µFlux™ platform showed that the formulations were able to deliver the drug through the biological membranes. This approach can be further evaluated in the in vivo studies to confirm the in vitro results.

REFERENCES


How does the observed precipitation of the API influence the drug permeation?

The results of the in vitro dissolution-permeability measurement on µFLUX™ platform show that the precipitation of the API has a significant impact on the permeation through the biological membranes.