Summary

"A Pharmaceutical Study on Controlled Release Pentoxifylline in Solid Dosage Forms"

Controlled-release dosage forms offer several advantages over conventional therapy. These advantages include, maintenance of drug levels within the desired range, thus achieving better plasma profile, fewer drug administration, lower toxicity, optimal use of drug in question and increased patient compliance. Pentoxifylline was the first drug approved for the treatment of intermittent claudication secondary to chronic occlusive vascular diseases. It has solubility of 191 mg/ml at 37ºC and $t_{1/2}$ value being in the range of 0.39 to 0.84 hours, therefore, it is a potential candidate for controlled- release formulations, however controlling its release is a challenging task due to its high water solubility. In a trial to control the release of the drug over an extended period of time, several controlled-release formulations of pentoxifylline were prepared and evaluated in view of their release rate profile, physical and chemical stability. Therefore the work in this thesis includes the preparation and storage of drug-excipient mixtures with subsequent evaluation of the possible interaction of pentoxifylline with different additives. Preparation and evaluation of hydrophilic and hydrophobic matrix tablets using hydroxypropylmethylcellulose (HPMC) 15cps and 4000 cps, hydroxypropylcellulose (HPC), guar gum, xanthan gum, and sodium alginate in concentrations of 15, 25, and 35%. Also combinations of HPMC 4000 cps with xanthan gum and sodium alginate in a ratio 1:1 were also used in the same concentrations. The hydrophobic polymers were Precirol® ATO 5, Compritol®888 ATO, bees wax, paraffin wax, carnauba wax and stearyl alcohol. Also preparation and evaluation of pentoxifylline capsules and finally pysical and chemical stability of some selected pentoxifyllline tablet and capsule formulae. It could be concluded that pentoxifylline could be formulated into different solid dosage forms that show physical and chemical stability and offer optimum drug release required controlled release formulations.

المشرفين

أ.د/ أحمد عبد البارى عبد الرحمن

أستاذ الصيدلانيات و الصيدلة الصناعية

وعميد كلية الصيدلة جامعة القاهرة الأسبق

كلية الصيدلة - جامعة القاهرة

د/ أميمة نعيم فوزى الجزايرلى

أستاذ مساعد الصيدلانيات و الصيدلة الصناعية

كلية الصيدلة - جامعة القاهرة