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Characteristics of interpolyelectrolyte complexes of Eudragit E100 with Eudragit L100

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Abstract

With a view to the application in oral controlled drug delivery systems, the formation of interpolyelectrolyte complexes (IPEC) between Eudragit E100 (EE) and Eudragit L100 (EL) was investigated, using turbidimetry, solution viscosity measurements and elementary analysis. The structure of the synthesized IPEC was investigated by using FT-IR spectroscopy. The binding ratio of a unit molecule of EL with EE was found to be approximately 1:1 in pH 6.0. Based on the results of elementary analysis, and FT-IR, the binding ratio of each component in the solid complexes was very close to that observed in turbidity and viscosity measurements and indicate that the synthesized products can be considered as IPEC. Due to the structure of the IPEC, two maxima were observed in the swelling behaviour as a function of pH. The release of the model drug ibuprofen was significantly retarded from tablets made up of the IPEC.

Keywords: Interpolyelectrolyte complex; Eudragit E100; Eudragit L100; Ibuprofen; Controlled release

1. Introduction

The use of different types of Eudragit for controlled drug delivery has been well known [1,2]. Depending on the pH, these polymers act as polyelectrolytes which make them suitable for different purposes, from gastric or intestinal soluble drug formulations to insoluble but swellable delivery forms, regulated by percentage of charged and non-ionized (ether) groups in the structure of these copolymers. Some of them can be considered as polycations (Eudragit type E, RL, RS, and NE) and the others as polyanions (Eudragit types L and S). The first ones can have positively charged groups: dimethylamino groups in Eudragit type E, or quater-

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