Formulation of metoprolol bilayer tablets as an oral modified release dosage form

Abstract

Metoprolol is a β1 adrenergic blocker used in treatment of heart diseases. Metoprolol (100mg) tablets was formulated as a modified release oral system utilizing the concept of bilayer system, first layer contained (30mg) as immediate release and the other (70mg) in the sustained release matrix. The immediate release layer consisted of lactose or microcrystalline cellulose as diluents with sodium starch glycolate or sodium croscarmellose as disintegrants. The result showed that the layer contains microcrystalline cellulose and 2% sodium starch glycolate gave disintegration time similar to that of conventional metoprolol tartrate tablet. This result was subjected in the subsequent preparation of the bilayer tablet. The sustained release layer was prepared using three polymers: ethylcellulose (EC), Hydroxypropyl methylcellulose (HPMC) and hydroxyl ethylcellulose (HEC) as retardant materials. It was found that the combination of EC with HPMC in ratio of 2:1 in F11 was best formula because of it's release profile and the tablet integrity and dimensions were conserved for the period of the test, but according to similarity factor (f 2), F15 (which contained EC:HPMC in ratio 2:1 with polyvinyl pyrrolidone (PVP) as a binder) was the best formula showed higher (f2) among all other formulas and equals to 72.3 comparing to reference product.