RELEASE OF PROPRANOLOL HCL AS DRUG COMBINATION FROM MATRIX TABLET SYSTEM

Anis Yohana Chaerunisaa[1,2)], Andriy Dashevskiy[2)], Roland Bodmeier[2)]

[1)] Fakultas Farmasi, Universitas Padjadajaran, Bandung, Jl. Raya Jatinangor Km 21.5 Sumedang 45363, Indonesia

[2)] College of Pharmacy, Freie Universität Berlin, Kelchstraße 31, Berlin 12169, Germany

e-mail: anis.chaerunisaa@yahoo.de

ABSTRACT

The purpose of the research was to study the release of propranolol HCl as model of highly soluble drug in matrix tablet system as drug combination.

Tablets were prepared by direct compression method. Alternatively, propranolol HCl was granulated with Ethocel 10 cP (1:1) using isopropanol:water (88:12 w/w) prior the mixing and compression. The granulation were conducted either conventionally by high shear method or using fluid bed granulator. Another approach was by direct compression of blends containing propranolol HCl coated pellets and other excipients. Drug release was performed in a USP paddle apparatus in phospate buffer pH 6.8.

The results showed that using direct compression method, propranolol HCl was released fast because of its high solubility. It was released rapidly from Ethocel® 10cP based matrix tablets and was extended from Methocel® K15M based tablets. Applying Methocel as polymer matrix showed that Granulation of propranolol in fluid bed granulator extended the release to more than 18 h.

It can be concluded that Fluid bed granulation method prior to compression as matrix tablet provided highest retardation of propranolol HCl in matrix tablet system.

Keywords: Propranolol HCl, release, matrix tablet system

I. Introduction

Drug combination therapy for the treatment of a disease offers some advantages including increased convenience for physician and patient, improved compliance and low cost of production, storage and transport. One of the manufacturing challenges regarding product formulation issues of drug combination could be due to the different solubility of the drugs which will give different release profile. Several publications have reported the effect of drug solubility on the release from hydrophilic, monolithic matrices. Higher drug solubility generally leads to faster release because of their high diffusional driving force. As drug solubility