INTRODUCTION

The generic pharmaceutical industry in Thailand has expanded enormously during the last 10-20 years. The growth has been driven by a number of factors, in particular the need to contain public spending on health care, including drug products. The protection of consumers demands that a generic drug product that is intended as a substitute for, or to be interchangeable with, the drug product of the pioneer or innovator pharmaceutical company, must be 'equivalent' [1, 2].

Substitution of a generic drug product for an innovative drug product requires that the products must not only be pharmaceutically equivalent, but also bioequivalent. In general, for a generic product to be regarded as bioequivalent with the innovative product, any difference in the rate and extent of absorption of the active moiety to systemic circulation and thus the site of drug action must be judged clinically insignificant. The fundamental reason for performing bioequivalence testing is to ensure, as far as possible, the quality of generic drug products. In particular, such testing is intended to establish that there are not likely to be any differences in safety and efficacy between a generic and an innovative drug product; that is, that the products are therapeutically equivalent. Thus, in essence, bioequivalence is considered a surrogate of therapeutic equivalence [1, 2].

Dissolution testing is a traditional measurement used for controlling pharmaceutical quality of product. The test is a useful *in vitro* study to pre-evaluate the drug prior to *in vivo* bioequivalence studies since the extent and rate of dissolution of the active ingredient in the

dissolution testing is analogue to the process in the gastrointestinal tract which is known to influence the extent and rate of drug absorption to the systemic circulation (bioavilability of drug).

Atenolol is a β-blocker widely used for the treatment of hypertension, arrhythmias, angina pectoris and acute myocardial infarction [3, 4, 5]. It is a synthetic, cardioselective β_1-adrenergic receptor antagonist without intrinsic sympathomimetic activity (ISA). Because of its cardioselectivity, it has been shown to produce comparable therapeutic (reduction of blood pressure, cardiac output and heart rate) with less adverse effects (bronchoconstriction, peripheral vasoconstriction and glycemic disturbance) than propranolol. Therefore, atenolol is considered a preferable agent in patients with bronchospastic diseases (asthma, chronic obstructive pulmonary disease), diabetes mellitus and occlusive peripheral vascular disease [6, 7].

At present, two dosage forms of oral atenolol preparations (50 mg and 100 mg) are available in Thailand both as the innovative (Tenormin®, Zeneca [East Asiatic]) and the generic preparations (Prenolol®, Berlin Pharmaceutical and Tenolol®, Siam Pharmaceutical). Since the bioavailability studies of the generic and the innovative preparations of atenolol in Thai volunteers have never been reported, this study was thus conducted to determine dissolution and pharmacokinetic properties hence bioequivalence of a single oral administration of atenolol in healthy Thai volunteers.