CHAPTER I

BACKGROUND AND RATIONALE

Glaucoma is a large group of disorders that are characterized by widely diverse clinical and histopathologic manifestations. It is a situation in which the intraocular pressure (IOP) is too high for the normal functioning of the optic nerve head. Currently, it is defined as the disease of the optic nerve head. The patients who have optic nerve damage and visual field defects typical to glaucomatous eye, will be diagnosed as glaucoma, irrespective of level of IOP. Glaucoma is estimated to have caused blindness in 5.2 million people worldwide, and is the third leading cause of blindness around the world. There are three major modalities of treatment for glaucoma; medical , laser and surgery. Most studies have shown that the risk of visual field loss in glaucoma increases linearly with the level of IOP. Hence, the aim of treatment in every modality, is to lower the IOP.[1] If the target pressure is not achieved or if there is noted progression of the disease, a second medication, laser treatment, or glaucoma surgery may be considered. Because the risk of surgery may outweigh any potential advantage, most

clinicians are reluctant to use surgery as the primary treatment for open-angle glaucoma.

Medication is the first line of treatment in open angle-glaucoma. Nonselective β-blockers (such as, in this study, timolol) are generally the first agents used to treat open-angle glaucoma. However, these drugs interact with both the β_1 - and β_2 - adrenergic receptors and, therefore, have the potential to cause serious cardiovascular and pulmonary side effects from blockade of the β-receptors in the heart, vessels, and bronchi. They may be contraindicated in patients with actual or suspected compromised cardiovascular or pulmonary function because they can cause cardiac arrhythmia or bronchospasm which, in rare circumstances, can lead to death. Apart from that, there is a possibility of significant side effects from topical β- blockers even in patients with no known systemic predisposition.[2] Depression, dizziness, increase in the signs and symptoms of myasthenia gravis, and impotence are well-recognized complications of β-blocker therapy. In fact, systemic side effects are the major limitation to the use of topical β-blockers.

Pilocarpine, which we used in this study, is a miotic that is commonly used in adjunct with timolol in Thailand, because it is not expensive. But many patients can not tolerate it due to the side effects

such as dimmed vision in elderly cataractous patients, reduced vision, headache and browache in young patients.[3] Apart from that, prolonged use of miotic can lead to miosis that results in difficulty in cataract surgery. Thus, some ophthalmologists try to avoid using it.

There are other glaucoma drugs that have been used in glaucoma practice nowadays. But most of them have potential side effects, for instance, oral carbonic anhydrase inhibitors (CAIs). Even though they are beneficial to some patients, they are the drug of last resort because of the potential for serious, even life threatening, systemic side effects.[4] During the past 20 years, several new glaucoma medications have been introduced, such as topical CAIs., alpha 2 adrenergic agonist and prostaglandin.

Latanoprost is a new topical prostaglandin which is very interesting because it has not only the ability to reduce high level of intraocular pressure than older medications but also fewer systemic side effects.[5,6] However, there are relatively few studies about this drug in glaucoma patients in Thailand. Therefore, we studied the effectiveness, side effects and cost effectiveness of this new drug compared to the old one.