CHAPTER I

INTRODUCTION AND OBJECTIVE

Introduction

The mule is an offspring of male donkey and female horse. Mules are smarter, stronger and have longer working lives than horses (1). For these reasons, mules are majorly bred and trained for tacking and transporting military equipment along the borders of Thailand. Both male and female mules can be used for this purpose but the males have to be castrated prior to the training in order to reduce testosterone-induced aggressive behaviors and to prevent fighting during the breeding season (2). However, standing castration is not possible for untrained animals (2-4). General anesthesia is then the most suitable method to control the animal for this operation because of safety for veterinary medical staff and mules in addition to the animal welfare aspect (2-4).

Premedication using sedatives and/or analgesics has been known to improve the quality of general anesthesia and reduce the amount of anesthetic drugs required to produce adequate anesthesia (3, 5-11). Alpha$_2$ adrenergic agonists (α_2 agonists) are commonly used in equine species not only for sedation, analgesia and muscle relaxation but also for premedication. The most common α_2 agonists using in equine species are xylazine and detomidine. In horse, detomidine produces more potent and longer sedation at lower doses than that of xylazine due to the selectivity to the α_1 and α_2 adrenergic receptors (selectivity ratios: α_2/α_1) in presynaptic and

postsynaptic neuronal and nonneuronal tissues (8, 12-13). Selectivity ratios of xylazine and detomidine to α_2 adrenergic receptor and α_1 adrenergic receptor are 160:1 and 260:1, respectively (8, 12-14). Although there are numbers of publications on α_2 agonists as sedation and premedication in horses, very few researches have been performed in mules. Variation of recommended dosage for α_2 agonists among equine species has been addressed by previous researches (5, 15-21). Based on clinical practice, some researchers indicated that approximately 50% higher dosage of xylazine or detomidine was required to produce adequate sedation before anesthetic induction in mules, compared to horses (18-21). Therefore, an intravenous dosage of 1.6 mg/kg of xylazine or of 0.03 mg/kg of detomidine has been recommended for premedication in mules (20). Knowing the clinical efficacies of these drugs administered at the above dosages is crucial for a safe and effective premedication protocol in this animal.

Objective

This study aimed to compare the premedication effects of xylazine and detomidine in mules undergoing general anesthesia with thiopentone.