CHAPTER III

Preliminary study

This chapter provides information on two preliminary studies. The first study investigated the prevalence of back pain of in riding horses in Thailand. The second study, measured the level of pressure pain tolerance of riding horses suffering from back pain was measured. Results from both studies were used as baseline information for the main study.

3.1 Prevalence of back pain in riding horses in Thailand
Background

Although back pain in riding horses had been commonly reported in many countries, no official record was found for horses in Thailand. The high prevalence of back pain in riding horse reflected the need of effective treatment. Therefore, the aim of this study was to survey the prevalence of back pain problem among riding horses in Thailand.

Method

Letters were sent to three horse riding clubs asking for permission to screen their horses for back pain. Two horses riding clubs were situated in Chiang Mai while the other was in Bangkok. The first club in Chiang Mai was a private club with 14

horses while another was a government organization with 31 horses. The third club was very big riding club in Bangkok with 34 horses.

The methods used for screening back pain in riding horses were as followed:

- Observation of the back area i.e. symmetry of back muscles, abrasion (especially at withers)

- Palpation of the back area and gentle thumb pressure along the back muscle with thumb

- Strocking along the meridian which was the bladder channel using ball point Signs of discomfort such as muscle contraction, back dropping, walking away , kicking or biting indicated that the horse had back pain

Horses that showed signs of discomfort on palpation and stroking were considered to have back pain.

Result

Prevalence of back pain in riding horse from three horse riding clubs is presented in Table 3.1. It can be seen that nearly 50% of these horses suffered from back pain. When considering the place, both private clubs had less percentage of horses suffering from back pain compared to the government club.

Table 3.1 Percent of back pain in each riding club

Place	Total	Back pain	%
• Private horse riding club in Chiang-Mai	14	5	35.71
• Government club	31	18	58.06
• Private horse riding club in Bangkok	34	16	47.05
Total (N)	79	39	49.36

Discussion

Back pain is an important problem that affects both riding and sport horses. Both had high prevalence of back pain that might relate to over work or associated with poor balance or weight bearing of the rider or possible unfitting saddle. Pain suffering in animals should be treated immediately, as the owner, trainer, and rider are all concerned about their animal's welfare. Therefore the effective treatment is required.

The problem of back pain not only occurs in the horses in riding schools and clubs but also occurs in sports horses. The horses in riding schools are often used to teach beginners who have no experience of balance or weight-shearing on a horse's back. This may be a cause of back pain in horses. However, most of the horses were used to overload riding and this may be one of the risk factors of chronic back pain.

The level of understanding about back pain may vary among trainers, owners, or riders. Some of them rarely know injury to the horse's back may occur from riding. Another important factor that may affect the occurring of back pain is unfitting

saddle. In Thailand, not many people understand how to use and choose suitable saddles and saddle pads in terms of size, shape, and position for their horses. The saddle was one of the important equipments that are used to support and distribute weight from the rider to the horse's back. An unfit saddle may be a risk factor for back pain.

Horses in government setting were more likely to be overused when compared to that of the private club. This may be a reason why the percentage of back pain was higher in the government unit. In addition, due to limited budget, the government units tend to buy uniform saddles which may not fit well with all their horse's back. Effective treatment in term of non invasive, fewer side effects, low cost and high efficient is necessary for these horses in order to return to work as quickly as possible.

3.2 Level of pain measured by a pressure algometer

To date, no standard measurement of muscle pain in animals is available in a research setting. Most clinicians evaluate the level of pain in a subjective way such as observation of behavioral change. The degree of pain may be estimated using a numbering system from 0 to 9. However, this subjective measurement lacks reliability and accuracy. In humans, pressure algometry is one of the tools used for measuring pain level.(67) The level of pain tolerance is measured in a unit of pound per square centimeters. To the author's knowledge, only one study had used pressure algometry for measuring pain level in horses (68) and there was no standard protocol for this purpose. Therefore, the aim of this study was to establish the protocol of pain measurement in horses using pressure algometry and to compare the level of back pain in riding horses and normal pain-free horses.

Method

Forty eight horses with or without back pain participated in this study. For the horses with back pain, palpation was performed along the spinous process of the back area and the back muscles were gently pressed with the thumb of the examiner. Then a ball point pen was used to stroke the bladder meridian which was around the back area. If the horse had back pain, it would have shown signs of discomfort. The positive signs of discomfort included muscle contraction, back dropping, walking away, kicking, or biting.

When the most painful point of each side of the back was found, it was marked using a whiteboard pen. Then the hair at the painful point was clipped. Afterwards the pressure algometer, a tool for measuring the level of pain ranging from 1 to 22 lb/cm2, was placed perpendicular to the marking point. The investigator slowly pressed the pressure algometer until the the horse showed signs of back muscle contraction. The level of pain was read from the scale at eye level. Measurements were performed four times with 15 seconds of rest in between. Data from the first measurement was discarded. The mean measurement of pain pressure from each side of the back was calculated from the last three measurements. The average level of pain in each horse was then calculated from the average level of pain from both sides of the back of horse.

For normal horses, pressure algometer was placed between T18 and L1. The level of pain was measured using the same method described for horses with back pain.

Results

Descriptive data form the two groups of horse were describe in table 3.2.The range of pressure tolerance in horses suffering from back pain was lower than the non back pain group. In the back pain group, the range of pressure was between 2.67 and 4.50 while the non back pain group was between 5.25 and 11.25 lbs/cm^2

Table 3.2 Descriptive data of pressure pain level of back pain and non back pain groups

Pressure pain	Non Back pain (N:24)	Back pain (N:24)
Range	5.25 -11.25	2.67-4.50

Discussion

The pressure algometer can classify the range of pain between the non back pain and back pain horses so that it is sensitive enough to measure back pain in horse

As the range of pressure pain in both groups was different from each other, it supported the reason for choosing pressure algometer as a tool to measure level of pain in horses. To improve the accuracy of measurement, pressure algometer must be placed perpendicular to the trigger point and the scale must be read at eye level when the horse showed signs of muscle contraction.