

## CHAPTER VI

### Discussion

Electro-acupuncture was more effective for a treatment of back pain in sport horses compare to rest. After five session of EA ( 3 day interval), the horses had less pain. EA was compared with rest for 15 days, which was considered moderate based on general recommendation for acute back pain. Longer rest for horses might cause stress, muscle atrophy, and colic. Thus EA seemed to be a good alternative compared with rest.

Pressure algometer was an objective and useful tool for measuring pain in horses. For horses that were dropout from the study, compliance of the horses to EA was accident. Even though, EA is an invasive procedure, the response of most horses were positive (clam and relaxed). Horse restrain may be required for the EA in horses that are not easy to handle.

The result of this study is consistent with the results of the study by Xie and Colahan, 2005 that Electro-acupuncture is effective for treatment of back pain.

However, the study by Xie and Colahan used thoracolumbar score to evaluate level of pain. In the current study, pain was measured objectively using pressure algometer.

From the results, six horses had injuries during data collection and this was the main reason for dropped out. One horse had running into the fence during paddock, one had mouth injury, the other four horses had kicked the stall after electro acupuncture stimulation was released for 10 minutes. These six horses required anti inflammation and antibiotic which were the exclusion criteria for the study.

The stall restraint is essential for acupuncture to keep the horse stay in the good position. It is easy to penetrate the needle and administrate the electrical; however, some sensitive hoses were scared and excited when taken into the stall and being stimulated.

Poor environment such as too many stable flies or alarm noise may disturb the horses. Some may kick the stall and got injury when it was frightened. Therefore, during acupuncture, penetrate needle and administrate the electrical, the horse should be relax or clam down. The treatment unit should be in peace, had good ventilation without noise or bite – insect to interfere. Four horses which were alarmed and kicked the stall, they might be disturbed by noise from the shoeing of other horses around that area, intolerant electrical stimulation, or the bite insect.

When compared between rest and EA group, the horses in EA were improved after treatment. It indicated that electro-acupuncture treatment can be used to relieve pain in horses. The analgesic effect of electro-acupuncture is believed to be mediated via various mechanisms. The gate control theory (32) is one of the possible mechanisms. The acupuncture analgesia in human(37) and animal models(40-42) is reversible by naloxone, a specific opioid antagonist, indicating the participation of endogenous opioids is in acupuncture analgesia (Fig2.17). In animal models, the role of spinal enkephalin and dynorphin is believed to involve in acupuncture analgesia at spinal level. An increase in total endorphin content after EA is found in several brain regions. However, a positive correlation between the degree of analgesia induced and endorphin content is observed only in the midbrain area (e.g., periaqueductal gray) and septum-accumbens. An increase in beta-endorphin level is also found in human CSF and plasma when low frequency EA is given (43). However, neither changes in CSF

nor plasma beta-endorphin relates to the effectiveness of acupuncture for pain relief. Stimulation of acupuncture points triggers the pituitary gland to release adrenocorticotrophic hormone (ACTH), which stimulates the adrenal glands to release cortisol into the bloodstream. Serum cortisol is a natural steroid anti-inflammatory agent which acts to reduce inflammation and pain in affected areas(44).

Electro-acupuncture is a method in which an electric current is passed to the animal through the needle and into the points. It is recommended for treatment of equine musculoskeletal disorders(61). The acupuncture points #2, 3, 4 and 5 as describe at table 2.1 are documented for electro-acupuncture treatment of back pain in horses(49). Xie (62) applied Electro-acupuncture to treat seven horses with chronic back pain by using 80-120 Hz of frequency and eight acupuncture points#1, 2, 4, 6 and 7 as describe at table 2.1. Each treatment was used for thirty minutes. After three weekly treatments, 2 horses returned to normal work and 4 horses had an alleviation of clinical signs of back pain, and 1 horse had alleviation but back pain recurred one month later.