

Thesis Title            Effect of Stevioside on  $\text{Na}^+ - \text{K}^+$  ATPase in  
Renal Proximal Tubules of Rabbit

Name                    Yaowaluk Limpanichakul

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Thesis Supervisory Committee

                          Varanuj Chatsudthipong, Ph.D.  
                          Chumpol Pholpramool, Ph.D.  
                          Chaivat Toskulkao, Ph.D.

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#### ABSTRACT

Stevioside, a major sweet substance of Stevia rebaudiana Bertoni, is now being used extensively in several countries as non-caloric sweetener. Recently, it has been found that intravenously infusion of stevioside produced changes in both systemic and renal system. It is also interesting to find that infusion of stevioside directly into renal artery can cause diuresis and natriuresis in rat without any significant changes in mABP, GFR and RBF. In addition, the major site of stevioside action has been proposed to be at the proximal tubule. Therefore, this study was designed to directly determine the possible mechanism of stevioside action at renal proximal tubules of rabbit in vitro using  $^{14}\text{C}$ -PAH accumulation and  $\text{Na}^+ - \text{K}^+$  ATPase activity as indicators for renal proximal tubular functions. The transport or accumulation of PAH (organic anion) is one of the most

commonly used as a functional marker of renal tubular cells.

Our results showed that stevioside caused both dose and time dependent significant depression of  $\text{Na}^+-\text{K}^+$  ATPase activity and  $^{14}\text{C}$ -PAH accumulation in isolated rabbit renal tubules. The change in PAH accumulation was found to correlate with  $\text{Na}^+-\text{K}^+$  ATPase activity after acute stevioside treatment. However, the depression of  $\text{Na}^+-\text{K}^+$  ATPase activity was completely reversible after removal of stevioside at low dose (0.1 mM), whereas depression of PAH accumulation was only partially reversible. This finding suggests that the changes in tubular functions such as PAH accumulation is likely to be partially involved with  $\text{Na}^+-\text{K}^+$  ATPase activity that is necessary for tubular functions.