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AND MUCUS IN THE RAT

BY

MISS WISUDA SUVITAYAVAT, B.Sc. (Pharm.)

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EFFECT OF CYTOCHALASIN E ON THE GASTRIC SECRETION OF  $H^+$ , PEPSIN  
AND MUCUS IN THE RAT

Miss Wisuda Suvitayavat, B.Sc. (Pharm.)

Department of Physiology, Faculty of Science, Mahidol University,  
Rama VI Road, Bangkok 10400

ABSTRACT

Involvement of microfilament in the secretions of the gastric  $H^+$ , pepsin and mucus were investigated in the adult male rat by gastric fistula technique. A half milliliter of unbuffered saline containing different concentrations of cytochalasin E was instilled into the stomach. Every 30 min, the gastric content was collected and another half milliliter of the testing solution was replaced. Meanwhile the animals was continuously infused with either histamine, pentagastrin or saline. The secretory capacity of the gastric mucosa was studied for 5 hr.

Cytochalasin E had no effect on the gastric secretory volume and pepsin secretion but effectively inhibited the  $H^+$ -secretion and stimulated the protein and the mucus secretion in both the pentagastrin and histamine stimulated gastric mucosa and non-stimulated gastric mucosa. The cytochalasin E had a rapid onset of action. Its inhibitory action on gastric  $H^+$ -secretion was not due to its interaction with plasma membrane receptors or membrane enzyme, the presumptive  $H^+$ -transport enzyme  $K^+$ -stimulated ATPase. Although cytochalasin had no effect on the pepsin secretion, it did dilate the rough endoplasmic reticulum and nuclear envelope of the chief cell. The stimulatory mechanism of cytochalasin E on the gastric protein and mucus secretion might be the result of an increase in permeability of cell membrane.

From histological examination, the cytochalasin E did not damage the gastric mucosal surface but depletion of the mucus granules in the cells was evident. The ultrastructural study showed that the effect of cytochalasin E on both parietal cell and mucous cell seemed to be more pronounced at the antrum. The mechanism of action of cytochalasin E on the gastric secretion was suggested to be due to its specific action on the individual cell, rather than a non-specific damage action.

