

## BM-3

### Two Types of Vanadate-sensitive Microsomal ATPases in Tracheal Epithelial Cells

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The physiological activity of tracheal epithelial cells is closely related with the ionic conditions of cytosol, specially the concentration of cytosolic  $\text{Ca}^{2+}$ . We have prepared microsomes in these cells and the molecular mechanisms of ionic regulations were investigated. More than 40% of microsomal ATPase activity was mediated by the intracellular  $\text{Ca}^{2+}$ -ATPase, a thapsigargin-sensitive  $\text{Ca}^{2+}$  pump, while the major part of microsomal ATPase activity remained unknown. Although microsomal ATPases were inhibited by both vanadate and nitrate, only vanadate blocked whole activity of microsomal ATPase. In dose-response, vanadate inhibited completely the activity of microsomal ATPase at 5 mM. Interestingly, the activity was gradually decreased with vanadate at below 100  $\mu\text{M}$ ; however, the activity drastically dropped to zero at above 100  $\mu\text{M}$  vanadate. The dose-response curve was fitted to a function of two components by multiful gaussian with  $K_I$  values of 1  $\mu\text{M}$  and  $\sim 2$  mM vanadate. Thapsigargin only blocks the low affinity vanadate-sensitive ATPase and the high affinity vanadate-sensitive ATPase was independent of thapsigargin at whole range of concentration. These results suggest that there are a high affinity and a low affinity vanadate-sensitive ATPases and the low affinity vanadate-sensitive enzyme seems to be the ER-type intracellular  $\text{Ca}^{2+}$ -ATPase.