

## Effects of Poisonous Mushroom Extracts on the Microsomal $^{45}\text{Ca}^{2+}$ Uptake and Release in Porcine Epithelial Cells

Kyoung-Soo Cho, Young-Soo Hwang<sup>1</sup>, and Young-Kee Kim  
Dept. of Agricultural Chemistry, Chungbuk National University, and  
<sup>1</sup>Nat'l Agric. Sci. & Tech. Inst., RDA, Suwon.

Extracts were prepared from six different poisonous mushrooms in order to identify biologically active natural ligands. The effects of these extracts were examined on the microsomal  $^{45}\text{Ca}^{2+}$  uptake and  $^{45}\text{Ca}^{2+}$  release. Five out of six species apparently inhibited the activity of total microsomal ATPases prepared from the epithelial cells of pig airway. However, these extracts increased the microsomal  $^{45}\text{Ca}^{2+}$  uptake and, specially, *O. radicata* increased microsomal  $^{45}\text{Ca}^{2+}$  uptake more than 200%. The extract-induced activation of  $\text{Ca}^{2+}$ -ATPase was also supported by the effect of thapsigargin, a specific antagonist of  $\text{Ca}^{2+}$ -ATPase, since the extract-induced effects were thapsigargin-sensitive. Based on above results following two possibilities can be suggested; 1) some extracts may consist of at least two active components; one activates the  $\text{Ca}^{2+}$ -ATPase and the other inhibits the major part of total ATPases except  $\text{Ca}^{2+}$ -ATPase, and 2) some extracts may also inhibit the enzymes used in an enzyme-coupled assay, an indirect enzymatic system to measure the activity of ATPases. Extracts of three species, *A. virosa*, *R. aurea*, and *R. formosa*, seem to belong in the first category and those of two species, *L. perlatum* and *O. radicata*, seem to belong in the second category. The effects of these extracts on the microsomal  $\text{Ca}^{2+}$  release channel and on the microsomal [ $^3\text{H}$ ]InsP<sub>3</sub> binding are also under investigation.