

2-008-5

## Detection of autophagy-related structures in the fruiting bodies of *Pleurotus ostreatus*

Yuma Ozaki<sup>1)</sup>, Tadanori Aimi<sup>2)</sup>, Norihiro Shimomura<sup>2)</sup>

<sup>1)</sup>The United Graduate School of Agricultural Sciences, Tottori University, Japan

<sup>2)</sup>Faculty of Agriculture, Tottori University, Japan

---

**Purpose:** Recent studies have revealed that autophagy is involved in the phenomenon of fungal morphogenesis such as sporulation and germination in conidium, and appressorium formation in pathogenic fungi. However, limited information is available regarding the involvement of autophagy in the process of mushroom fruiting. In the present study, we aimed to detect autophagy-related structures in the fruiting bodies of *Pleurotus ostreatus*.

**Methods:** Specimens were fixed in 2.5% glutaraldehyde in 0.1 M phosphate buffer, followed by fixation in osmium tetroxide in 0.1 M phosphate buffer. These samples were embedded in resin, and ultrathin sections were visualized under an electron microscope.

**Result and Conclusion:** Electron microscopic study revealed that the double membraned structures were detected in the cytosol ranging from 500-2,000 nm in diameter. The internal composition of the double membrane structure was morphologically identical to that of the cytosol. The double membraned structures appeared to be in contact with the vacuolar membrane, suggesting that the double membraned structure was an autophagosome, which is typically observed in the process of macroautophagy. In contrast, cytosol or mitochondria surrounded by membrane was observed in the vacuole, indicating that a part of the cytosolic component was sequestered into the vacuole. While the membranes sequestering cytosolic component into vacuoles are indistinguishable from that of the vacuoles, invaginated vacuolar membrane inside the lumen was observed, signifying the involvement of the microautophagy process. These findings suggest that autophagy is involved in the process of fruiting body formation in *P. ostreatus*.