

3-16. The glyoxysomal nature of microbodies complexed with lipid globules in *Botryosphaeria dothidea*.

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The glyoxysomal nature of microbodies was determined in *Botryosphaeria dothidea* hyphae based on morphology and *in situ* enzyme characteristics by transmission electron microscopy and cytochemistry. Bound by a single membrane, microbodies had a homogeneous matrix and varied in size ranging from 200 to 400 nm in diameter. Microbodies had crystalline inclusion(s) which consisted of parallel arrays of fine tubules in their matrices. Microbodies and lipid globules were frequently placed in close association with each other, forming microbody-lipid globule complexes in hyphae. The cytochemical activities of catalase and malate synthase were localized in matrices of microbodies, showing intense electron-density of the organelle. In addition, the immunogold labeling detected the presence of catalase in multivesicular bodies and hyphal cell walls as well as in matrices and crystalline inclusions of microbodies, supporting the enzyme secretion through cell walls. Meanwhile, isocitrate lyase was localized only in matrices of microbodies. These results suggest that microbodies, particularly complexed with lipid globules, in the fungal hyphae are functionally defined as glyoxysomes, where glyoxysomal enzymes are biochemically active for the glyoxylate cycle to be a metabolic pathway in gluconeogenesis. (Mycology and Fungus Diseases)

3-17. Distribution of Seed-borne Fungi on Rice Seeds Affecting Rice Grain Quality

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Seed-borne fungal pathogens on rice seeds were investigated in order to evaluate their effect on rice grain quality. Rice seeds of two cultivars, Ilmiby eo and Daesanby eo were collected from 27 areas of Korea and the fungal parasites on seeds were isolated by using a blotter method. Isolation frequency and number of species were varied from collection areas of seed samples. A total 13 species of fungi were identified from the seeds. Among them, *Alternaria alternata* was the most frequent over the country. *Bipolaris oryzae* most commonly from Gyeongbuk and Jeonbuk, *Alternaria padwickii* from Jeonbuk, and *Nigrospora oryzae* from Choongnam. However *Bipolaris. oryzae*, *Alternata padwickii*, and *Nigrospora oryzae* were the most frequently isolated fungi from Gyeongbuk and Jeonbuk, and Chungnam, respectively. *B. oryzae*, *A. alternata*, *A. padwickii*, and *N. oryzae* were dominants on Ilmiby eo showing 10.3%, 10.2%, 5.2%, and 5.2% infection rate, respectively. While, *N. oryzae*, *A. alternata*, and *Cladosporium* sp. were most frequently isolated fungi from Deasanby eo revealing 15.1%, 9.6%, and 7.5% infection rate, respectively. These fungi inhabiting on hulls or endosperms of rice seed might be considered as potential factors decreasing rice grain quality. Further investigation of the fungi on grain

rice quality are undergoing.

3-18. New method for sclerotial isolation of *Sclerotium* spp. from infested soil

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White rot on *Allium* species recently had a high incidence as increased cultivating areas of tropical garlic types in Korea. Two types of *Sclerotium* have been known as causal agents producing different size and shapes of sclerotia in infested fields. We developed a new method for isolation of two types of sclerotia from infested field soils that can be used for ecological study of *sclerotium* spp. and establishment of control strategy. Soil samples collected from heavily infested fields were evenly mixed and placed on a automatic sieve shaker connected with tap water. After 10 min. of shaking, residues on 0.5mm and 0.25mm sieve were separately collected and suspended with 70% sugar solution, which method floats sclerotia in aqueous layer. Then, floated fraction was carefully separated and mixed with a same volume of 1% sodium hypochlorite solution to differentiate with organic materials. This method provides direct count of sclerotia under dissecting microscopy.

3-19. Pathogenic and Molecular Characteristics of *Agrobacterium vitis* strains isolated from Grapevine in Korea

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Agrobacterium vitis is a causal agent of crown-gall disease on grapevine. In Korea, grapevine variety (GeoBong) have severely been infected by the bacteria since stems of the variety were buried in soil for overwintering. Infection ratio over 70-80% was observed on 7 years old GeoBong grapevine in Ansung and Cheonan. PCR specific primers for *A. vitis* strains were designed using nucleotide sequences of *vir A* gene in Ti-Plasmid, *pheA* gene in chromosomal DNA and a URP-PCR polymorphic band. Three hundred bacterial strains were isolated from the different 80 galls formed on GeoBong grapevine in Cheonan and Ansung of Korea and were screened to identify *A. vitis* using the three specific PCR primers for *Agrobacterium vitis*. Twenty-four bacterial strains that are detected by the primers were further confirmed by pathogenicity and biochemical methods. To investigate the genomic diversity of the bacterial strains, twenty primers of 20 mer referred to universal rice primers (URP) were applied for PCR fingerprinting. Of them, URP2R and URP2F primers could effectively be used to detect polymorphism within the bacterial strains.

3-20. Characterization of the host reaction of some citrus plants with *Xanthomonas*