Diseases Caused by Fungi and Fungus-Like Organisms

First Report of Post-Harvest Gray Mold on Hyacinth Bean (*Lablab purpureus*) Caused by *Botrytis cinerea* in Korea

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Hyacinth bean (*Lablab purpureus* L.) is a highly proteineous legume under the family Fabaceae. It is native to Africa, cultivated throughout the world, and was recently introduced in Korea. In April 2020, approximately 10 to 15% of the total harvested pods showed gray mold rot symptoms after 3 to 5 days of storage at 4°C in Jeonju, Jeonbuk province, Korea. The symptoms observed were irregular, water-soaked spots on infected pods becoming brown or gray with white hyphae. Diseased tissue was excised, surface sterilized by immersing in 1% sodium hypochlorite (NaOCl) for 1 min, rinsed three times with sterilized distilled water, placed on potato dextrose agar (PDA) plates, and incubated at 20 ± 2°C for 7 days. A total of five morphologically similar fungal isolates (HBGM001 to HBGM005) were obtained from diseased samples; isolate HBGM002 and HBGM005 were selected for identification. The fungus produced initially white colonies; after 7 days, colonies changed to gray to dark with dark mycelium that sporulated abundantly on PDA at 20°C. The conidia ($n = 50$) were single-celled, ellipsoid or ovoid in shape, and 6.11 to 13.9 × 4.8 to 9.4 µm in size for HBGM001 isolate and 5.81 to 14.1 × 4.5 to 9.6 µm in size for HBGM005. Conidiophores ($n = 15$) arose solitary or in groups, straight or flexuous, septate, with an inflated basal cell brown to light brown, and measured 103 to 420 × 7 to 25 µm for HBGM001 isolate and 101 to 415 × 5 to 23 µm for HBGM005 isolate. After

two weeks, the fungus formed several black sclerotia ($n = 20$) ranging from 0.5 to 4.2 × 0.5 to 3.4 mm for HBGM001 isolate and 0.4 to 4.4 × 0.3 to 3.3 mm for HBGM005 isolate near the edge of the Petri dish. Morphological characters were consistent with those of *Botrytis cinerea* Pers.: Fr. (Ellis 1971). As for molecular identification, the internal transcribed spacer (ITS) and three nuclear protein-coding genes (glyceraldehydes-3-phosphate dehydrogenase gene [G3PDH], heat-shock protein 60 gene [HSP60], and DNA-dependent RNA polymerase subunit gene [RPB2]) were amplified using primer pairs ITS1/ITS4 (White et al. 1990), G3PDH-F/G3PDH-R, HSP60-F/HSP60-R, and RPB2-F/RPB2-R (Staats et al. 2005), respectively. The ITS, G3PDH, HSP60, and RPB2 sequences of HBGM002 and HBGM005 isolates (GenBank accession nos. MT439648 and MT968495 for ITS; MT439649 and MT968496 for G3PDH; MT439650 and MT968497 for HSP60; MT439651 and MT968498 for RPB2, respectively) were 99 to 100% identical to those of *B. cinerea* (KY364366, KF015583, KJ018758, and KJ018756, respectively). To determine pathogenicity, five disinfected pods were pinpricked (three sites per pod) with sterile needles and 50 µl of conidial suspension (1×10^5 conidia/ml) was inoculated by pipetting into the wounds. An analogous five pods, serving as controls, were inoculated with sterile distilled water. All the pods were placed in a growth chamber and maintained at 20 ± 2°C and relative humidity >80%. After 5 days, gray mold symptoms developed on the inoculated pods, whereas no symptoms appeared on control pods. The pathogen was reisolated from the inoculated pods, fulfilling Koch's postulates. *B. cinerea* has been reported causing gray mold in Hyacinth bean in China, Taiwan, and India (Farr and Rossman 2021). To our knowledge, this is the first report of *B. cinerea* causing postharvest gray mold on hyacinth bean in Korea. The disease could represent a threat for hyacinth bean postharvest and storage and management strategies should be investigated and applied.

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