

Colletotrichum Disease of Mungbean Sprout by *Colletotrichum acutatum*

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Decayed samples of marketed mungbean sprout were collected from Sacheon, Suncheon, and Dangjin cities in Korea. Initial symptom on hypocotyls was dark-brown diamond speck, which developed into enlarged sunken brownish-black spot with irregular margin, followed by softening yellowish decay. Brown speck on cotyledon further developed into irregular lesions. This study isolated the fungus *Colletotrichum* sp. The fungal colony was pale orange, which turned greenish gray after 1 week at 25°C. Colony color of reverse side in a petri dish was pink. Neither conidiomata nor setae were present in the culture. Typical fusiform conidia sized 7.5-15.0 × 2.5-2.9 μ were hyaline, aseptate, smooth, and had salmon color in mass. Conidiogenous cells were phialidic, hyaline, smooth, and cylindrical with terminal distinct collarette. Based on these mycological characteristics, the casual organism was identified as *Colletotrichum acutatum*. This is the first report of *Colletotrichum* mungbean sprout rot caused by *Colletotrichum acutatum* in Korea.

Keywords : *Colletotrichum acutatum*, mungbean sprout, sprout rot.

Mungbean sprout is one of most popular vegetables in Korea, accounting for 170 billion won (US\$ 0.13 billion) in the domestic market, and equivalent to one-fourth of the soybean sprout market. Mungbean sprout is also used as stuffing in the production of dumpling (mandoo) and as raw ingredient in the manufacture of Woodong (Chinese noodle) flakes. Mungbean sprout rot is one of most serious problems of the commercial mungbean sprout industry. However, its caused agent has not been well understood yet.

In this study, samples of mungbean sprout rot from various regions in Korea, including Sacheon, Suncheon, and Dangjin, were collected. The causal pathogen was isolated from these samples, and then identified.

The rotten samples were surface-sterilized for 1 minute with 75% ethanol and 1% sodium hypochlorite solution,

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transferred on potato dextrose agar (PDA), and incubated at 25°C for 3 days. The growing hyphal tips were aseptically transferred to fresh medium. The fungus produced pink ascervuli and numerous conidia, without setae and aerial mycelia *in vitro*.

For the pathogenicity test, the conidia of the fungal isolates were inoculated onto mungbean seeds by dipping in conidial suspension for 6 hours. The inoculated seeds were cultured in a small growth chamber watering every 4 hours for 7 days. Lesions on infected seedlings appeared after 5 days. The symptoms were as follows: a brown speck or diamond-type brown speck appeared and enlarged into sunken irregular dark-brown spot on the hypocotyls of the seedlings, which eventually resulted in yellowish soft rot. The slimy material from the yellowish lesion was confirmed to be the conidial mass under the microscope. The infected seedlings were not able to grow any more.

The fungal isolates on PDA appeared yellowish at first, and the colony color changed to greenish grey in a week. Bottom of the colony turned into pink color. Acervulus and setum were not produced on PDA. Conidia were hyaline, one-celled, fusiform, and sized 7.5-15.0 × 2.5-2.9 μ. Conidia forming cells were phialide type, hyaline, smooth, and had apical cell characteristic of the collarette type. The isolate was identified as *Colletotrichum acutatum* (Dyko and Mordue, 1979).

Han and Lee (1995) reported *C. truncatum*, *C. destructivum*, and *C. gloeosporioides* as the causal agents of *Colletotrichum* diseases of mungbean. The conidium of *C. truncatum* was falcate, whose teleomorph was unknown, producing pinky acervuli and dark brown setae on PDA, and formed sclerotia on dark green mycelia, the degree of which varied among isolates (Khan and Sinclair, 1992). Conidia of *C. destructivum* were cylindrical with constricted center with both ends acute, color of colony was pink which later turned grey and formed round sclerotia. Its teleomorph was *Glomerella glycines* (Han and Lee 1995). These two species had decayed black cotyledon and detached infected cotyledon, and produced brown lesions on stem and leaves.

Another species *C. gloeosporioides* was also known but was more or less weakly pathogenic. Kim et al. (2002) reported *C. truncatum* and *C. gloeosporioides* as causal

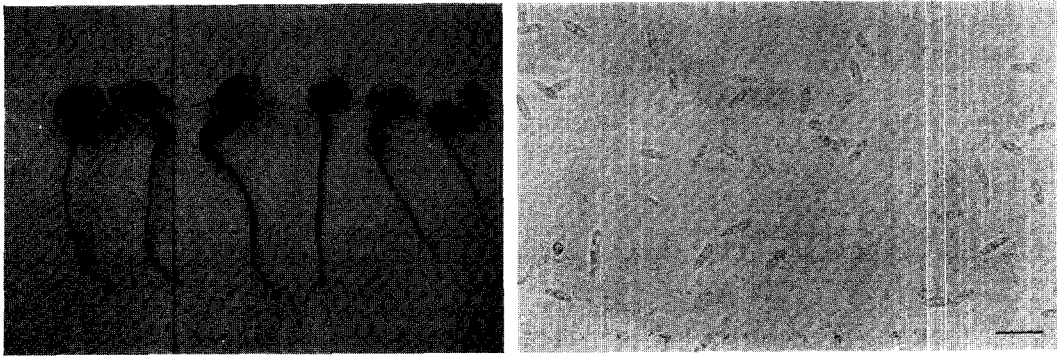


Fig. 1. Symptom of *Colletotrichum* rot of mungbean sprout and its causal agent. Left: diseased mungbean sprout by *Colletotrichum acutatum*. Right: conidia of *C. acutatum* (scale bar = 25 µm).

agents of soybean sprout rot, but no results relevant to mungbean sprout rot were available.

This study described *Colletotrichum acutatum* as the causal agent of mungbean sprout rot. The pathogenicity was tested under the same condition as that of commercial mungbean sprout cultivation. This pathogen was different from *C. gloeosporioides* in that the color of colony was yellow to pink, producing fusiform conidia, and there was no known teleomorph stage.

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