

Short Note

Worldwide new host record of *Sclerotinia sclerotiorum* on *Cannabis indica* in Jammu, India

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(Received: 10 April 2016; Revised: 15 May 2016; Accepted: 12 June 2016)

Abstract

Sclerotinia sclerotiorum (Lib.) de Bary, the causal organism of over 500 host plants is distributed worldwide, and it is among the most nonspecific, omnivorous and successful plant pathogen. On *Cannabis indica* stem, white mycelial growth bearing black, spherical to cylindrical sclerotia was observed. It was identified as *Sclerotinia sclerotiorum* (Lib.) de Bary. To the best of our knowledge, this is the worldwide new host record of *Sclerotinia sclerotiorum*.

Keywords: *Cannabis indica*, new host, pathogenicity, *Sclerotinia sclerotiorum*

Cannabis indica, belongs to family Cannabaceae, a near relative of *Cannabis sativa*. *C. indica* can be distinguished from *C. sativa* by its high concentration of CBD (cannabidiol) relative to “⁹ THC (delta-9 tetra-hydrocannabinol), making *C. indica* the preferred species for traditional medicinal use (Korte, 1970). The medicinal properties of *C. indica* have been known from time immemorial. In India, *C. indica* resin and foliage has been prescribed orally for pain relief, as an anti-convulsion, a treatment to reduce and eliminate seizures, and to reduce psychological stress and anxiety. It was considered effective especially for treating headaches due to malaria infection and migraines (Wujastyk, 2001). *C. indica* was also the probable species of *Cannabis* described as a painkiller in ancient Chinese medicinal literature. In China and Taiwan, *C. indica* is listed as one of the 50 essential medicinal plants, every part of the plant was used medicinally, including the leaves, flowers, leaf juice, seeds, seed oil (Smith, 1911).

During a disease monitoring in last week of February 2013, symptoms typical of *Sclerotinia* stem rot were observed on *Cannabis indica* at the Research Farm of Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu, India (32°55'N and

32°44'N latitude, and 74°48'E and 74°55'E longitude) which fall under sub-tropical zone of agro-climatically situations. Approximately 60 to 70% of *C. indica* plants were observed to be lodging due to stem rot, with white mycelial growth on the stem, bearing



Fig. 1: *Cannabis indica* showing *Sclerotinia* mycelial growth and sclerotia formation

black, spherical to cylindrical, 6 to 11 mm sclerotia, and from inside stem was bleached (Fig. 1). Sclerotia and stem portion from diseased stems were surface sterilized, and placed in 9-cm diameter Petri plates on potato dextrose agar (PDA, Merck, Germany) amended with 50 mg/l streptomycin sulphate (Sigma, St. Louis, USA). Inoculated plates were incubated in the BOD at 22±2°C for 5 days (Sharma *et al.*, 2011). Fungal cultures consisting of white mycelia, and medium-sized (mean 7.2 mm), black, irregular sclerotia were consistently recovered (Fig. 2), and identified as *Sclerotinia sclerotiorum* (Lib.) de Bary based on morphological characteristics (Kohn, 1979). Pathogenicity was tested by satisfying of Koch's postulates (Sharma *et al.*, 2012a,b, 2013a,b), and determined by inoculating 45 days old ten *C. indica* plants, mycelia plugs (5 mm in diameter) were excised from the colony margin after 6 days of incubation at 22± 2 °C, and placed on stem of *C. indica* plants at the soil line. Ten control plants were inoculated with non-colonized PDA plugs. Symptoms similar to those observed in the field were evident after 15 days on inoculated plants and *S. sclerotiorum* was re-isolated. In the control plants, no symptoms developed, and the fungus could not be isolated. The experiment was repeated with similar results.

Sclerotinia sclerotiorum (Lib) de Bary, is ubiquitous, omnivorous, soil-borne, and most destructive plant pathogen distributed worldwide. Sclerotinia rot is

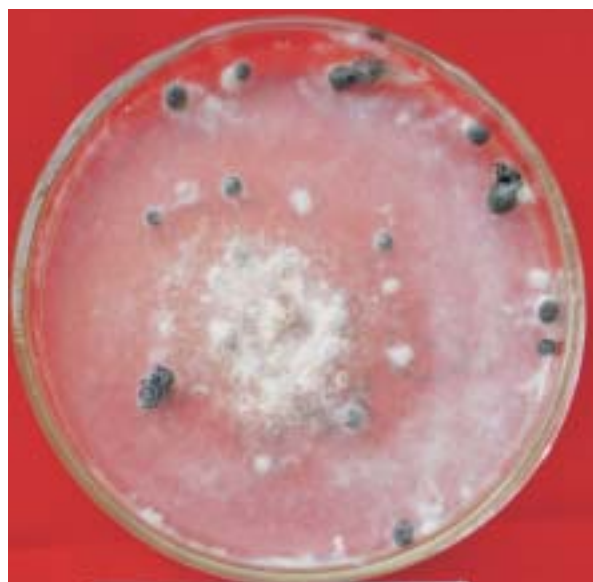


Figure 2: Mycelial growth and sclerotia of *S. sclerotiorum* on PDA

more common and severe in temperate and subtropical regions of in cool and wet seasons. The pathogen is known to infect over 500 plant species of diverse phylogenetic backgrounds including 278 genera in 75 families of dicotyledonous, and a number of significant monocotyledonous plants (Boland and Hall, 1994; Saharan and Mehta, 2008). To our knowledge, this is the new record of *S. sclerotiorum* causing stem rot of *C. indica* as per the literature cited worldwide (Boland and Hall, 1994; Saharan and Mehta, 2008).

References

- Boland GJ, Hall R. 1994. Index of plant hosts of *Sclerotinia*. *Can J Plant Pathol* **16**: 93-108.
- Kohn LM. 1979. A monographic revision of the genus *Sclerotinia*. *Mycotaxon* **9**: 365-444.
- Korte F. 1970. The botany and chemistry of Cannabis (Eds) Joyce CRB, Curry SH, J&A Churchill, London, 119 p.
- Saharan GS, Mehta N. 2008. Sclerotinia diseases of crop plants: Biology, ecology and disease management. Springer Science+Business Media B.V. The Netherlands, 485 p.
- Sharma P, Meena PD, Chauhan JS. 2013a. A new host for *Nigrospora oryzae* (Berk. & Broome) Petch causing stem blight on *B. juncea* from India. *J Phytopath* **161**: 439-441.
- Sharma P, Meena PD, Singh YP. 2013b. New record of twig blight on *Catharanthus roseus* in India. *African J Microbiol Res* **7**: 4680-4682.
- Sharma P, Singh N, Verma OP. 2012a. First report of Curvularia leaf spot, caused by *Curvularia affinis* on *Dalbergia sissoo*. *Forest Pathol* **42**: 265-266.
- Sharma P, Singh N, Verma OP. 2012b. First report of *Colletotrichum gloesporioides* on *Jasminum grandiflorum* in India. *J Plant Protect Res* **52**: 91-92.
- Sharma P, Rai PK, Siddiqui SA, Chauhan JS 2011. First report of Fusarium wilt in the broomrape parasite growing on *Brassica* spp. in India. *Plant Dis* **95**: 75.
- Smith FP. 1911. Chinese materia medica: vegetable kingdom. American Presbyterian Mission Press, Shanghai, 90-91 p.
- Wujastyk D. 2001. Cannabis in traditional Indian herbal medicine. Wellcome Library, London, 1-15 p.