

White rot of *Centella asiatica* and two weeds in West Bengal, India

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ABSTRACT

White rot caused by *Sclerotinia sclerotiorum* (Lib.) de Bary is first time recorded on *Centella asiatica* (L.) Urb., *Gnaphalium polycaulon* Pers. and *Nasturtium indicum* (L.) DC in a homestead garden in West Bengal. In 2013, January death and drying of this *Centella asiatica* plant in patches was noted in a homestead garden at Kalyani, West Bengal. In morning hour, white mycelial growth was found on the petiole of some plants in the green patch. With advancement of the disease, more and more plants were affected, which became covered with mycelial growth of the pathogen. After 4-7 days the affected plants died. *Gnaphalium polycaulon* and *Nasturtium indicum* growing with *Centella asiatica* were infected by the same disease. Water soaked lesion appeared on the petiole or main stem of *Gnaphalium polycaulon* and flower stalk of *Nasturtium indicum*. Prominent mycelial growth developed on such lesions. The affected plants died in due course.

Keywords : *Centella asiatica*, *Gnaphalium polycaulon*, *Nasturtium indicum*, *Sclerotinia sclerotiorum*, white rot

Centella asiatica (L.) Urb. (syn.: *Hydrocotyle asiatica* L.) is a small herbaceous perennial plant, native to India, China, Indonesia, Australia, the South Pacific, Madagascar, and southern and middle Africa. It grows preferably in damp swampy areas, up to 700 meters above sea level. This slender creeping plant has long, prostrate, filiform stems with long internodes, rooting at nodes. The long petioled leaves, 1-5 in number from each node, are reniform, oval or orbicular, deeply cordate, 1-7 cm in diameter. The small, purple to white-green flowers, 3-6 in number, are arranged in umbels arising from the axils of the leaves. The fruit is 8 mm long, ovoid, hard with strongly thickened pericarp. Since ancient times, *C. asiatica* has been used in traditional Indian medicine for various pathological disorders (Jamil *et al.*, 2007; Chakraborty, 2014). In West Bengal, this plant is popularly known as *Thankuni*. It grows naturally as weed in crop field or waste land. Recently, many people started to grow this plant in their home garden for its enormous medicinal value or to use its leaves as vegetable. Very little information is available regarding incidence of diseases on this crop in west Bengal. Present study include detail information of a new disease of *Centella asiatica* and wild host of its pathogen.

Symptoms of the disease on *Centella asiatica* and its gradual development were noted in a homestead garden at Kalyani, West Bengal. Simultaneously, appearance of similar symptoms on weeds growing inside the bed of *Centella asiatica* was also recorded. The pathogen was isolated in chloramphenicol amended potato dextrose

agar medium (PDA) by placing surface sterilized infected host tissue.

For pathogenicity test, mycelial strip from four days old culture of the pathogen on PDA was placed at the crown region of *Centella asiatica*. Water was spread over the entire plant and the inoculated plant was covered with polythene packet to maintain moist condition for three days. After three days polythene cover was removed. Observation was taken on the development of symptoms. The work was done in the month of January -February, 2013. Again the pathogen was isolated from inoculated diseased plant.

In 2013, January death and drying of this *Centella asiatica* plant in patches was noted in a homestead garden at Kalyani, Nadia. Morning hour, white mycelial growth was found on the petiole of some plants in the green patch. With the advancement of the disease more and more plants were affected, which became covered with mycelial growth of the pathogen. After 4-7 days the affected plants died. No sclerotia formation on the disease plants was noted. After collecting such plant and incubating in polythene bag under moist condition (Khatua *et al.*, 2014) the entire plant had been found to be covered with white mycelial growth within three days and the entire plant was rotted.

During morning hour, *Gnaphalium polycaulon* Pers. and *Nasturtium indicum* (L.) DC were found to grow with *Centella asiatica*. A few *Gnaphalium polycaulon* and *Nasturtium indicum* were infected by the same disease. Water soaked lesion appeared on the petiole or main stem of *Gnaphalium polycaulon* and flower stalk of *Nasturtium indicum* (L.) DC. Prominent mycelial growth developed on such lesions. The affected plants died in due course.

Short communication

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Fig. 1: White mycelial growth in petiole of *Centella asiatica*



Fig. 2: Complete rotting *Centella asiatica* with white mycelial growth



Fig. 3: White rot of *Gnaphalium polycaulon*



Fig. 4: White rot of *Nasturtium indicum*



Fig. 5: Growth of *Sclerotinia sclerotiorum* on PDA

The pathogen isolated from infected *Centella asiatica*, *Gnaphalium polycaulon* and *Nasturtium indicum* grew well on PDA medium amended with chloramphenicol. The causal fungus produced white mycelium with hyaline, branched and septate hyphae, and black coloured elliptical to near spherical sclerotia. The sclerotia were silvery white in the initial stages of development but turned dark with increasing age of the culture. The pathogen was identified as *Sclerotinia sclerotiorum* (Lib.) de Bary as the cultural characteristics were in conformity with the description of the large sclerotial forms of the fungus (Purdy, 1955; Purdy, 1979; Khatua *et al.*, 2014a, Khatua *et al.*, 2014b). Artificial inoculation with the culture of the *Sclerotinia sclerotiorum* produced disease successfully on *Centella asiatica*, *Gnaphalium polycaulon* and *Nasturtium indicum*.

Two diseases of this medicinal plant (*Centella asiatica*), namely Bacterial wilt caused by *Ralstonia solanacearum* (Smith) Yabuuchi *et al.* (Zoysa and Liyanage, 1994) and Leaf spot caused by *Cercospora centellae* Manohar., Kunwar & Sharath (Manoharachary *et al.*, 2003) have been reported earlier, but white rot caused by *Sclerotinia sclerotiorum* is recorded first time in India. Two weeds, *Gnaphalium polycaulon* (Fig. 3) and *Nasturtium indicum* (Fig. 4) are new addition to the host range of *Sclerotinia sclerotiorum*.

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