

ON *COOKEINA INSITITIA* FROM INDIA

BY

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This paper deals with a detailed illustrated account of *Peziza insititia* Berk. & Curt., which is a new record for India. The taxonomy of the species is also discussed, which has been shifted between *Cookeina* Kunt., *Boedijnopeziza* Ito & Imai and *Microstoma* Bernst. by different workers. It is accepted here under *Cookeina*.

Peziza insititia was included in *Cookeina* by Kuntze (1891). Boedijn (1933) made critical observations and pointed out its marked differences from all other *Cookeina* species in the presence of a gelatinous layer in its apothecia and single wall layer in its ascospores. He also observed the presence of a nearly continuous subconical sheath, almost closing the aperture of its young apothecia, which later ruptured radially to form hairs in mature apothecia. Based on these differences, Ito & Imai (1937) segregated it from *Cookeina* and made it the type of their new genus *Boedijnopeziza*.

Rifai (1968), Korf (1970, 1971, 1972) and Otani (1971) accepted *Boedijnopeziza* for *P. insititia*. Korf (1971, 1972) considered *Cookeina colensoi* (Berk.) Seaver sensu Le Gal also to be related to *P. insititia* in the presence of a gelatinous layer in the excipulum and smooth ascospores and so treated this species along with *P. insititia* in *Boedijnopeziza*. However, Le Gal (1953), Denison (1967), Eckblad (1968) and Pfister (1973, 1977) continued to treat the gelatinous and nongelatinous forms and ornamented and smooth spored forms together in *Cookeina*. Pfister (1973), on finding the occurrence of gel in *C. venezuelae* (Berk. & Curt.) Le Gal, a species with ornamented ascospores, showed that the presence of gel is not correlated with smooth walled ascospores as believed by Korf. Also, he considered the peculiar mode of development of hairs and the absence of carotenoids in *P. insititia* doubtful unless verified by developmental and pigmentation studies. He further opined that the singular character of presence of a single ascospore wall layer in it is not so significant as to warrant its generic separation from *Cookeina*. His logical arguments have been accepted here and *P. insititia* has been described under *Cookeina*. I also agree with Rifai (1968), Eckblad (1968) and Pfister (1973) and do not accept Boedijn's (1951) disposition of this species in *Microstoma*.

Pfister (1977) made a mention of *C. insititia* (Berk. & Curt.) Kunt. from India. But later on (personal communication), he observed that the material

at BPI (a part of No. 160 PAN), on the basis of which he mentioned this species from India, was in poor condition and could not be finally identified and also expressed his doubts if that belonged to *C. insititia*. Earlier, No. 160 (PAN) was assigned to *C. colensoi* by Thind & Batra (1957) and was later transferred to *C. venezuelae* by Batra & Batra (1963). This collection at PAN could not be located and is probably lost. Obviously, in the absence of a good specimen, No. 160 (PAN) should not be referred to any of the species.

Cookeina insititia (Berk. & Curt.) Kunt., Rev. Gen. Plant. 2, 849, 1891.

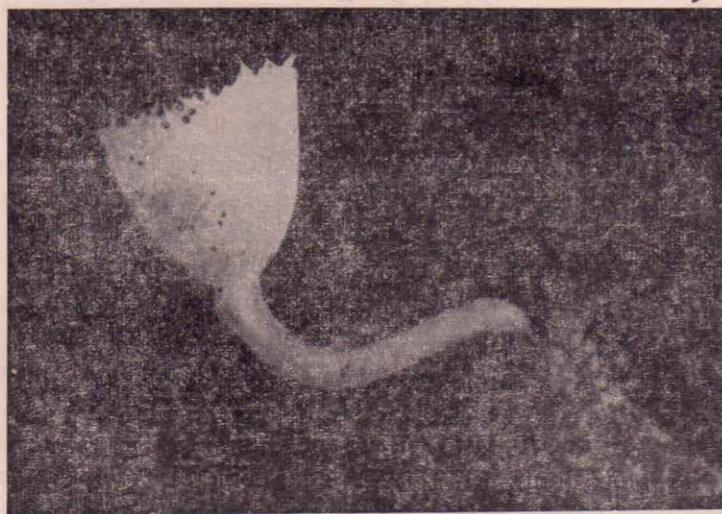


Figure 1 *Cookeina insititia* (Berk. & Curt.) Kunt. An apothecium

Apothecium 1.3 cm in diameter, deep cupulate, 9 mm deep, regular, stipitate; stipe 1.4 cm long and 2.5 mm in diameter towards pileus, thinner below, cylindrical, with few shallow longitudinal ridges and grooves, comprising solid, opaque core in the middle, surrounded by transparent gelatinous layer (more conspicuous in the upper part of the stipe), which is lined on the outside by white membranous sheath; external surface whitish, smooth to minutely pubescent due to projecting out cells of the ectal excipulum; margin thick (up to 400 μ m), sterile, sterile portion up to 930 μ m, hairy; hairs erect or curved above, scalene, triangular and flattened, up to 1.5 mm long and up to 0.22 (-0.35) mm broad at the base, gradually tapering towards the narrow apex, superficial, made up of fascicles of somewhat parallel, short-septate, unbranched, subhyaline hyphae up to 9 (-11) μ m wide; hymenium concolorous with the external surface, smooth. Asci 385-465 x 14.5-18 μ m, 8-spored, cylindrical, abruptly contracted below into a narrow hypha-like base, thick-walled, wall up to 1.4 μ m thick, apices obtuse, J-. Ascospores 47-67 x (8.6-)

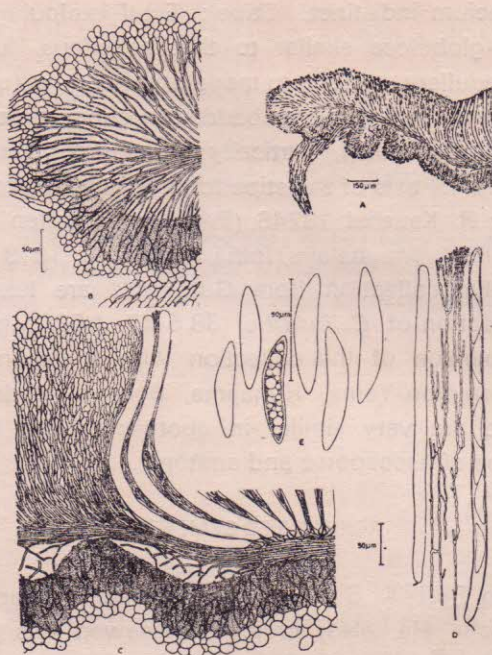


Figure 2. *Cookeina insititia* A. Diagrammatic vertical section of apothecial margin. B. V. S. of extreme end of apothecial margin. C. V. S. of apothecial margin just near hymenium. D. Asci and paraphyses. E. Ascospores.

9.3-11.2 μm , subfusoid, asymmetrical to distinctly curved, uniseriate, with alternating symmetry inside the asci, hyaline, smooth walled, multiguttulate. Paraphyses up to 1.5 μm wide below, delicate, irregularly branched and anastomosing, occasionally with irregular swellings up to 4.2 μm , profusely branched dichotomously at their narrowed apices. Anatomy: Pileus: Ectal excipulum up to 28.5 (-36) μm thick, composed of 2-3 layers of thick-walled, angular to subglobose cells up to 21.4 x 18 (-26.6 x 25) μm , projecting out at places to form minute pubescent hairs; medullary excipulum differentiated into 2 zones, outer gelatinous zone up to 60.5 (-72) μm thick, textura intricata, hyphae up to 1.5 μm wide, irregularly branched, mostly vertically oriented, embedded in copious gel; inner zone up to 38 μm thick, somewhat textura porrecta, hyphae up to 3.5 μm wide, running horizontally, more or less parallel to one another and to the external apothecial surface, septate. The two excipular zones and medullary excipulum (both outer and inner medullary zones) continue in the sterile apothecial margin and at its extreme and textura porrecta of the inner medullary excipulum radiates as septate and branched hyphae bordered by small, thick-walled cells similar to those of the ectal

excipulum. Hypothecium indistinct. Stipe : Ectal excipulum textura angularis to textura angularis-globulosa similar to that of pileus, forming thin white membrane ; outer medullary excipulum made up of narrow (up to $2.2\ \mu\text{m}$ wide), branched, septate, intricating hyphae embedded in copious gel ; inner medullary excipulum composed of parallel, vertically oriented hyphae (up to $9\ \mu\text{m}$ wide) parallel to the longitudinal axis of the stipe forming solid, opaque core.

Specimen examined : R. Kaushal 18246 (PAN), on a fallen twig in an angiospermous forest, Tura Peak, Meghalaya, India, October 2, 1979.

Ascospores in this collection from Garo hills are longer as compared to those in the type collection of *C. insititia* ($38.5\text{-}47\text{ (-}52\text{)}\ \mu\text{m}$ long, fide Rifai 1968). But a comparison of this collection with a Japanese material of the species (Y. Otani, Ishimon-Yama, Hahajima, Bonin Islands, Dec. 4, 1977) reveals that the two are very similar in apothecial habit, habitat, size, shape, colouration, hairs, type of ascospores and anatomy.

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