endocrine-disrupting fish oils[3] used as biologic-binding additive need ground-truthing field-farming realities. Deficient documentation of family-farming knowledge and citizen-science on farmed-fish consumption allergies (caused by mercury, fungal toxins, anti-microbial resistance, chitosan, insect-meal chitin, synthetic canthaxanthins, histamine-rich canned stuff and yeast allergens) are visibly growing pain points.

More obscure allelopathic bioengineering, untested sustainable polyculture species combinations, unnotified seafood fraud and inordinate harvest-preservation (sodium meta bi-sulphite, formalin, essential oils, chitosan, alginates, gum arabic, xanthan) abuse, untested radiobiological sensitivity of exotic seaweeds[4] (*Ascophyllum nodosum*) added to shrimp feeds for 'Ascophyllan' active immunity-fraction, untested metallophilic attached-diatoms activated aquaculture waste sequestration are looming threats hidden today.

Bio-invasive fish effects on native pearlspot, deficient inventory of extremophilic aquaculturally-significant candidate listing, rock phosphate-originating heavy fertilization-aided pond bloom-grown shrimps and radioactive threats, rain storm-drain polluted roadside scampi, carp and tilapia ponds, modelling scarce suspended photosynthetic systems for water treatment *in situ* pond culture and a series of undeciphered, unspoken, untold, unrealized, unseen trouble-shooting issues, needs and problems do exist in modern-day field-aquaculture disciplines.

Iconic city consumption of cultured shrimp and exotic fish has soared high. Business aquaculture articles are accounted only for their content value, converging combined perspectives of field scientists with farmers as a cyber-visible, scientometric evaluation index of business aquaculture knowledge capital for peninsular India. Principal advances in aquaculture have always been the result of technological innovations from farm producers themselves[5]. Trouble-shooting segments intricately unresolved by producers prove a fertile research platform resulting in high-impact research recognition for scientists[5]. As the producers are conscientious not to adopt new findings until they witness field-manifestation under full-scale production conditions[5], time is ripe to revolutionize milking maximal business values from university research for business aquaculture with broader present and futuristic applicability upon diversified domains of freshwater, marine, brackish and high-saline food security. The internet of things concept, connecting data-gathering units to the internet enriches data available along aquaculture value chains[6]. Research on optimizing farm operation systems through computational studies of data (produce, harvest preservation, value-processing from farmgate-to-table) along the production chain bears vitality[7]. Production of utilitarian guidelines well-validated by end-users does enable further advanced learning of aquaculture applications[8]. Precision fish farming moves commercial aquaculture from traditional experience-basis to knowledge-basis farming production regimes[9].

Tapping new knowledge accumulated in a field aquaculture environment enriches aquaculture professional knowledge as a whole, the beneficence extending to business and societal domains. Field data in business aquaculture with respect to its contents and relevance, advance societal knowledge on aquatic food security. Knowledge sharing with peers in the same industry helps building mutualistic growth as a whole. There is an overall positive outlook in business aquaculture data publishing with a growingly interconnected nature of modern, minimal footprint, zero-waste aquatic food farming systems indicating future dimensions of applications of various techniques towards increased production from the aquaculture sector.

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Received 19 March 2019; revised accepted 11 November 2020

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Scytinostroma portentosum (Berk. and Curt.) Donk from West Bengal, India on a new host

During a survey conducted during 2012–2019 to record naturally occurring host plants of different wood-rotting fungi, some basidiocarps of a species of *Scytinostroma* Donk were found to grow on a dead branch of a living plant of *Artocarpus heterophyllus* Lam. (=*Artocarpus integrifolia* L.) belonging to family Moraceae causing white rot at Burdwan, West Bengal, India. These basidiocarps were studied both morphologically and anatomically for confirming the identification of this fungus.

Each basidiocarp was collected separately in polythene bags. Thin sections of each basidiocarp were cut using sharp blades and put in 5% KOH solution. Staining of the sections was done with cotton blue and mounted in lactophenol. After staining, some sections were teased apart with sharp needles and then mounted in lactophenol. Microscopic observations were made under 40× and 100× magnifications. A piece of each basidiocarp was attached onto the underside of a petri dish lid and the lid was inverted over the dish. The hymenial surface was placed over the malt-agar medium and after 2 h the basidiospores were discharged onto the medium and germinated to form cultures. The oxidase tests were carried out with polysporous cultures on media containing 1.5% Difco malt extract agar and 0.5% gallic acid and tannic acid respectively, as described by Davidson *et al.*[1] Basidiocarps were deposited in the Department of Microbiology, The University of Burdwan. Figure 1 shows the distribution of *Scytinostroma portentosum* in India.

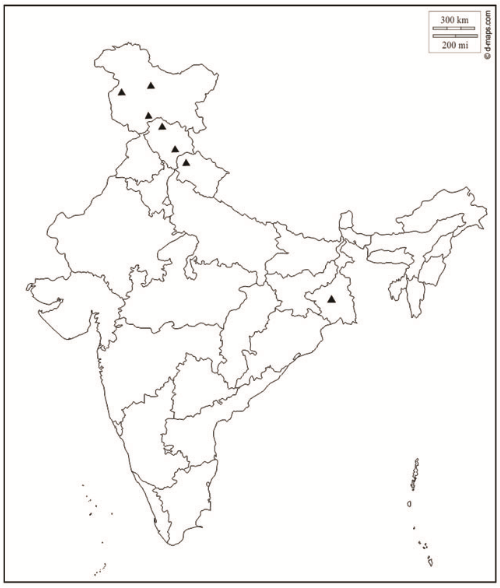

Figure 1. Map showing the distribution of *Scytinostroma portentosum* in India.

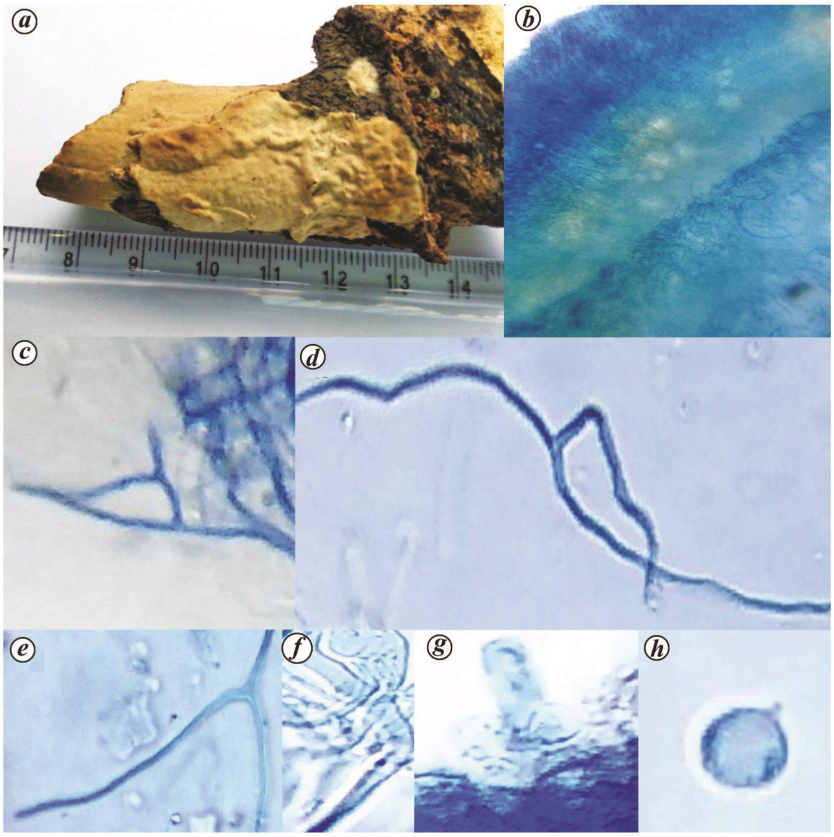

Figure 2. ***a***, Basidiocarp growing on dead wood of host (*Artocarpus heterophyllus*). ***b***, V.S. of basidiocarp showing stratum and prismatic crystals. ***c***, Generative hyphae. ***d***, Skeletal hypha with lateral branch. ***e***, Skeletal hypha with dichotomous bow-like branches. ***f***, Fusiform gloeocystidium. ***g***, Clavate gloeocystidium. ***h***, Basidiospore.

Morphological characters of basidiocarps: Resupinate, adnate, membranous, up to 1 mm thick; hymenial surface cream or light ochraceous, smooth; margin thin, light brown in colour.

Microscopic characters of basidiocarps: Context ochraceous in section, stratose, strata formed by the compactly arranged lateral branches of skeletal hyphae, large prismatic hyaline crystals present between the strata. Hyphal system dimitic. Generative hyphae (Figures 2 *c* and 3 *b*) infrequent and difficult to find, hyaline, thin-walled, branched, simple septate, 1.2–2.0 μm wide. Skeletal hyphae (Figures 2 *d*, *e* and 3 *c*) hyaline to sub-hyaline, thick-walled to solid, cyanophilous, 1.5–2.5 μm wide, laterally or dichotomously branched, aseptate; some skeletal hyphae form a horizontal layer above the hymenium by their bow-like branches, tips more or less tapering. Basidia (Figure 3 *d*) 30.0–35.0 × 4.5–5.5 μm, cylindrical, hyaline, thin-walled, tetrasterigmate, sterigmata up to 4.5 μm long. Basidiospores (Figures 2 *h* and 3 *e*) hyaline, globose, prominently apiculate, thin-walled, 4.5–6.0 μm in diameter, wall smooth. Gloeocystidia rare, of two kinds: some more or less fusiform (Figures 2 *f* and 3 *g*), 40–60 × 3.5–5.0 μm, slightly projecting beyond the hymenial layer, hyaline, thin-walled with pointed apex; others cylindrical or clavate (Figures 2 *g* and 3 *f*), 50.0–90.0 × 6.0–9.0 μm with subhyaline contents, aseptate, immersed.

Oxidase reactions: Positive on both gallic acid agar and tannic acid agar, as indicated by a black zone around the inoculum.

The morphological and anatomical features of the fungus indicate that it is *Scytinostroma portentosum* (Berk. and

Table 1. Record of host of *Scytinostroma portentosum*

Host	Family
Abies pindrow (Royle) Spach[5]	Pinaceae (=Abietaceae)
Alnus glutinosa (L.) Gaertn.[6]	Betulaceae
Berberis sp.[5]	Berberidaceae
Crossosoma bigelovii S. Watson[3]	Crossosomataceae
Hedera helix L.[7]	Araliaceae
Juniperus virginiana L.[8]	Cupressaceae
Mortonia scabrella A. Gray[3]	Celastraceae
Picea obovata Labdeb.[9]	Pinaceae (=Abietaceae)
Quercus arizonica Sarg.[3]	Fagaceae
Quercus emoryi Torr.[3]	Fagaceae
Quercus gambelii Nutt.[3]	Fagaceae
Quercus hypoleucoides A. Camus[3]	Fagaceae
Sapindus saponaria L. var. *drummondii* (Hook. & Arn.) L. D. Benson[3]	Sapindaceae
Salix caprea L.[10]	Salicaceae
Salvadora oleoides Decne[11]	Savadoraceae

Figure 3. ***a***, V.S. of basidiocarp showing stratum in context caused by skeletal hyphae. ***b***, Generative hyphae. ***c***, Skeletal hyphae. ***d***, Basidium. ***e***, Basidiospores. ***f***, Clavate gloeocystidium. ***g***, Fusiform gloeocystidium.

Curt.) Donk. *S. portentosum* causes white rot of its hosts[2–4]. A dark zone around the inoculum in oxidase test further confirms that the fungus is a white rotter. Table 1 presents hosts of *S. portentosum* recorded by different workers[3,5–11].

From the table it is evident that *S. portentosum* (Berk. and Curt.) Donk grows mostly on angiosperms and rarely on conifers (*Abies pindrow*, *Juniperus virginiana* and *Picea obovata*). No study has recorded *A. heterophyllus* Lam. (=*Artocarpus integrifolia* L.) of family Moraceae as a host of *S. portentosum* (Berk. and Curt.) Donk till date. Here, *A. heterophyllus* Lam. is reported as a new host of the white rot fungus *S. portentosum* (Berk. and Curt.) Donk. Interestingly, no other species of family Moraceae has been recorded so far to be parasitized by *S. portentosum* (Berk. and Curt.) Donk.

S. portentosum is morphologically similar to *Scytinostroma odoratum* (Fr.) Donk[12], but *S. odoratum* differs from *S. portentosum* due to the lack of dendrohyphidia, a greyish-white hymenial surface with very thin subiculum and cylindrical basidiospores in it[13].

Rattan[5] mentioned in his key to the species of *Scytinostroma* that in *Scytinostroma portentosum* gloeocystidia are absent or rare[5]. He did not find gloeocystidium in any of the 17 specimens studied. This is evident from his description where he states 'gloeocystidia absent'. Zhishu *et al.*[4] also did not find any gloeocystidium in specimens of *S. portentosum* collected from China. Parmasto[14], on the other hand mentions that gloeocystidia are present in *S. portentosum*, although they are scarce and hardly noticeable. In the specimens of *S. portentosum* collected from West Bengal also gloeocystidia are rare and hardly noticeable.

None of the workers[4,5,11,14] reported the presence of any crystal in the basidiocarp of *S. portentosum*, except Martini[15], who found abundant crystals in the strata of basidiocarp. Similar observation was made in the present study and this character should be regarded as important in the identification of this species.

Previously, *S. portentosum* was reported from three states of India, viz. Himachal Pradesh, Jammu and Kashmir[5,16] and Uttarakhand[17]. In the present study it has been recorded for the first time from the state West Bengal.

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ACKNOWLEDGEMENTS. We thank Dr S. K. Mukherjee and Dr P. K. Saha (Department of Microbiology, The University of Burdwan) for providing the necessary laboratory facilities to conduct this work. We thank Anirban Samanta and Amlan Mahata (Department of Microbiology, The University of Burdwan) and Kajal Krishna Das (Burdwan Raj College) for technical assistance.

Received 5 March 2020; accepted 5 November 2020

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