Botryodeorsum – a new genus of Moniliales from India

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ABSTRACT: A new hyphomycetous fungus of Moniliales group, *Botryodeorsum indicum* gen. et sp. nov. is illustrated and described from India. The genus is characterized by branched, long, erect, hyaline conidiophore bearing around stout lateral stalks downward; forming 3-5 oval to round vesicles directly on the stalk; producing many aseptate, hyaline, oval to ellipsoidal, rough, apiculate conidia on denticles; and soft, round to irregular dark brown sclerotia.

Key words: Anamorphic fungi, *Oryza sativa*, conidiophore, sclerotia, new taxon

A new fungus was found growing in the form of a white radiating hairs on the older leaf sheath of *Oryza sativa* L., collected from the glasshouse of the division of plant pathology, IARI, New Delhi. On critical examination, the fungus was found new and did not match with any existing genus of the Moniliales. Hence, it is described as a new genus with *Botryodeorsum indicum* as its type species.

*Botryodeorsum* Prameela, Nita Mathur, Chowdhry, Jasvir Singh and Om Prakash gen. nov. (Fig. 1)

Colonies effuse and white. Mycelium immersed, composed of branched, septate, smooth, hyaline hyphae. Conidiophores branched (Fig. 1a), long, slender, erect, hyaline, bearing downward lateral stalks acropetally appearing subulate in form (Fig. 1b,c,d). Stalks stout ending with vesicle, 3-5 vesicles in each stalk (Fig. 1e,f,g). Vesicles oval to round, bearing septa at base (Fig. 1h). Conidial ontogeny holoblastic, with localized apical wall-building simultaneously at different loci on denticles over the whole vesicle, each locus forming one conidium, delimited by one septum, maturation by diffuse wall-building, secession by rupture of denticle, no vesicle proliferation (Fig. 1g,h). Conidia are aseptate, hyaline, oval to ellipsoidal and apiculate (Fig. 1i,j). Sclerotia round to irregular, initially pinkish and turn to dark brown on maturation, usually giving rise to conidiophores on germination (Fig. 1k,l,m). Both sclerotia and conidiophores are produced in the culture.

*Botryodeorsum indicum* Prameela, Nita Mathur, Chowdhry, Jasvir Singh and Om Prakash gen. et sp. nov. (Fig. 1).


Colonies effuse and white. Mycelium immersed, composed of branched, septate, smooth, hyaline hyphae. Conidiophores branched (Fig. 1a), long, slender, erect, hyaline, bearing downward lateral stalks acropetally appearing subulate in form (Fig. 1b,c,d). Stalks stout ending with vesicle, 3-5 vesicles in each stalk (Fig. 1e,f,g). Vesicles oval to round, bearing septa at base (Fig. 1h). Conidial ontogeny holoblastic, with localized apical wall-building simultaneously at different loci on denticles over the whole vesicle, each locus forming one conidium, delimited by one septum, maturation by diffuse wall-building, secession by rupture of denticle, no vesicle proliferation (Fig. 1g,h). Conidia are aseptate, hyaline, oval to ellipsoidal, rough, apiculate conidia on denticles; and soft, round to irregular dark brown sclerotia.

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Colonies effuse, white with scattered radiating hair like, long, slender conidiophores which are septate, branched, broader at the base and narrowed at the tip, hyaline, erect, indeterminate, up to 4.0 mm in length, bearing around downward lateral stalks acropetally, appearing subulate. Stalks are stout, 75-300 x 25-55 µm, producing 3-5 vesicles, one at the terminal end. The older stalks are 300µm long, 35 µm wide at base and 15 µm at the apex. The younger stalks are short, up to 150 µm long, 5 µm wide at both the ends. Vesicles oval to round with septa at the base, 25-75 µm diam. Conidial ontogeny is holoblastic. Conidia of the botryo-blastospores are many, produced singly on denticles over the whole vesicles, aseptate, hyaline, rough, oval to ellipsoidal, apiculate, 25-65 µm long and 15-25 µm wide. Sclerotia many, soft, fleshy, round to irregular, initially pinkish, later turn to dark brown, upto 1200 µm diam. They are formed in the mycelium and produced conidiophores directly on germination. Both sclerotia and conidiophores are produced in the culture.

**Fig.1. Botryodeorsum indicum**

- **a.** Conidiophore branching; **b, c and d.** Full length conidiophores with downward lateral stalks; **e and f.** 3 or 4 or 5 vesicles in a stalk; **g.** Young vesicles producing conidia on sterigmata; **h.** Matured vesicles with septa and many botryoblastospores; **i, j.** Apiculate, oval and ellipsoidal conidia; **k.** Young and matured sclerotia producing conidiophores directly on germination; **l, m.** T.S. of matured sclerotium.
Table 1. Comparison of *Botryodeorsum* gen. nov. with other related genera

<table>
<thead>
<tr>
<th>Genus</th>
<th>Conidiophore</th>
<th>Lateral stalk</th>
<th>Vesicle</th>
<th>Conidia</th>
<th>Sclerotia</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Botryosporium</em></td>
<td>Indeterminate, 15 mm long, bearing lateral upward stalks, hyaline</td>
<td>Acropetal at upper half and basipetal at lower half, Swollen at the tip and the vesicles borne on the swollen part</td>
<td>Simple or with several lobes, polyblastic</td>
<td>Formed around the vesicle or the lobes of the vesicle, smooth, hyaline, globose or oval, or ellipsoidal, with or without striations, 4.5-5.5 x 2.5µm</td>
<td>Absent</td>
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<tr>
<td>Corda (Bunch of spores)</td>
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<tr>
<td><em>Botrytis</em> Micheli ex Fries</td>
<td>Determinate, stout, 2-3 mm long, branching in an irregular tree like form, olivaceous brown</td>
<td>Restricted to apical region, thin or stout, narrowing to a point, truncate, or with swollen warts or protruberences at the tips, often toothed.</td>
<td>Integrated, terminal, inflated, clavate or spherical, denticulate, polyblastic</td>
<td>Formed around the tips of the ultimate branches and branchlets, smooth, globose, ellipsoidal or long, hyaline or bright coloured, apiculate, 9-15 x 6.5-10µm</td>
<td>Present, irregular, dark brown to black</td>
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<td>(Grey mold) (Bunches)</td>
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<tr>
<td><em>Oedocephalum</em> Preuss</td>
<td>Determinate, gregarious, 0.2-0.5 mm long, vesiculose-inflated at apex, aspergillusiform pinkish to yellow</td>
<td>Absent</td>
<td>Verruculose, single, areolate or not, bearing conidia in a head, holoblastic</td>
<td>Produced on the swollen apex of conidiophore, sessile, smooth, globose, or ovoid, hyaline or bright coloured, 25 x 12µm</td>
<td>Absent</td>
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<td>(Tumour Head)</td>
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<tr>
<td><em>Botryodeorsum</em> gen.nov. (Bunching of conidia down-ward)</td>
<td>Indeterminate, 4.0 mm long, bearing downward lateral stalks, subulate form, hyaline</td>
<td>Acropetal, stout, ending with vesicle, 3-5 vesicles produced on each stalk</td>
<td>Simple, independent, oval to round, with septa at the base, denticulate, holoblastic</td>
<td>Produced over whole vesicle on denticles, single, hyaline, oval to ellipsoidal, rough, apiculate, no striations, 25-65 x 15-25µm</td>
<td>Present, initially pinkish later turn to dark brown, soft, on germination give rise to conidiophores directly</td>
</tr>
</tbody>
</table>


**Material examined:** On leaf sheath of rice collected from glass house, Div. of plant Pathology, IARI, New Delhi, Date, 13.11.04 Coll., Jasvir Singh, HCIO 46,384 (Holotype), ITCC 6034 (Cultotype).

The fungus examined and described, showed some peculiar characters in the structure of conidiophores, formation of sclerotia, vesicle arrangement, size and roughness of conidia. The most distinctive aspect of *Botryodeorsum indicum* is the presence of subulate conidiophore bearing down-ward lateral stalks forming 3-5 vesicles directly with basal septa producing big, apiculate, rough botryo-blastospores on denticles and the production of sclerotia in culture, which are forming conidiophores directly on germination. Such characters in Moniliales are unusual and provides justification for creation of taxon at generic level. It shows some similarity with conidiophore structure and conidia of the *Botryosporium*. The presence of lateral branching on conidiophore and aseptate, hyaline, apiculate conidial characters shared is with *Botrytis*, while presence of vesicle and production of botryo blastospore resemble partially with *Oedocephalum*. However, all the characters of this new fungus are not found (Table 1) in any known genera of Hyphomycetes (Subramanian, 1971; Kirk *et al*., 2001; Ellis, 1971,1976). Hence it is described as a new genus, *Botryodeorsum*, named after the presence of conidial bunches (botryo) downward (deorsum) with type species *indicum*, named after country of origin.

**REFERENCES**


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