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Research Article

LYCOPERDON PERLATUM PERS. VAR. *DOBREMEZIANUM* KREISEL (AGARICACEAE) – A NEW VARIETAL RECORD FOR INDIA

[*]Kanad Das
[*]*Botanical Survey of India, SHRC, P.O. Rajbhawan, Gangtok 737103, India*
**Author for correspondence*

ABSTRACT
Sikkim Himalaya is exceptionally rich with different kinds of macrofungi. In the present communication, *Lycoperdon perlatum* var. *dobremezianum* is described with the supporting illustrations for the first time from India.

INTRODUCTION
Being a part of one of the 34 Global Biodiversity Hotspots, Sikkim (India) is very rich in macrofungi and the diversity is exceptionally high. Explorations to different parts of West district and North district have been undertaken by one of us (KD) since 2008 and after thorough study a number of taxa were appeared to be new or interesting (Das, 2010; Das and Mishra, 2010; Das and Sharma, 2010; Das *et al.,* 2010; Das and Verbeken, 2011; Das *et al.,* 2011, Das and Verbeken, 2012; Das and Zhao 2012; Van de Putte *et al.,* 2012 and Das *et al.,* 2013). Gasteroid macrofungi are of no exception of it. Present communication deals with a variety which was collected from two different localities of Sikkim. First locality (in West district): Ribdi diversion which comes under Barsey Rhododendron Sanctuary and is a temperate mixed forested area, mostly dominated by *Lithocarpus pachyphyllus* Rehder. Second locality (in North district): between Chunthang and Charten is a temperate broad-leaved forested area and also dominated by *L. pachyphyllus*. Morphological studies followed by literature survey reveal that this taxon is not yet reported from this subcontinent. Macro- and micromorphological details coupled with the illustrations for *Lycoperdon perlatum* var. *dobremezianum* is presented in this communication. Its relation with the var. *perlatum* is also discussed.

Macromorphological characters were noted in the field or base camp from the fresh basidiomata. Field photographs of the fresh basidiomata were taken with the aid of Nikon D300s. Microphotographs were taken with the aid of attached camera of Stereo Zoom Dissecting Microscope, Nikon SMZ 1500 and Light Microscope, Olympus CX 41. Colour codes and terms mostly follow Colour identification chart of the Flora of British fungi (1969). Samples were allowed to dry with a field drier. In the laboratory, micromorphological characters were recorded from the dry samples mounted in a mixture of 5% KOH, 1% Phloxin, Congo red and 30% Glycerol and distilled water. Measurements of spores exclude the height of ornamentations and are recorded based on the observation of twenty basidiospores. Herbarium name is after Holmgren *et al.,* (1990).

Lycoperdon perlatum Pers. var. ***dobremezianum*** Kreisel, *Feddes Repert* **87**(1-2) 86 1976.

Basidiomata scattered to gregarious, pyriform, 28-45 mm high, 27-33 mm broad, bearing a globose to subglobose head with slightly attenuated apex and gradually narrower small stipe-like that are connected to the soil with branched rhizoids. Exoperidium yellowish white when young, gradually brownish, cinnamon (10) finally snuff brown (17) after maturity. Apical portion of exoperidium with verrucae (rounded to pyramidal) that are interspersed with larger pointed verrucae (spines), falling of larger verrucae (spines) leave buff-coloured round depressions amongst other verrucae producing distinct reticulum on exoperidium; verrucae 0.4-1.3 mm long, chalky to brown (with maturity). Basal portion of exoperidium with more or less persistent furfuraceous verrucae. Endoperidium papery straw (50) to buff (52), becoming grey with maturity, often shining with the areas where verrucae of exoperidium have fallen off. Dehiscence mostly by a circular ostiole. Gleba chalky white when immature, olive grey to grey when mature; pseudocolumella distinct. Subgleba distinct, up to 20 mm long, firm, alveolate, olive grey to grey.

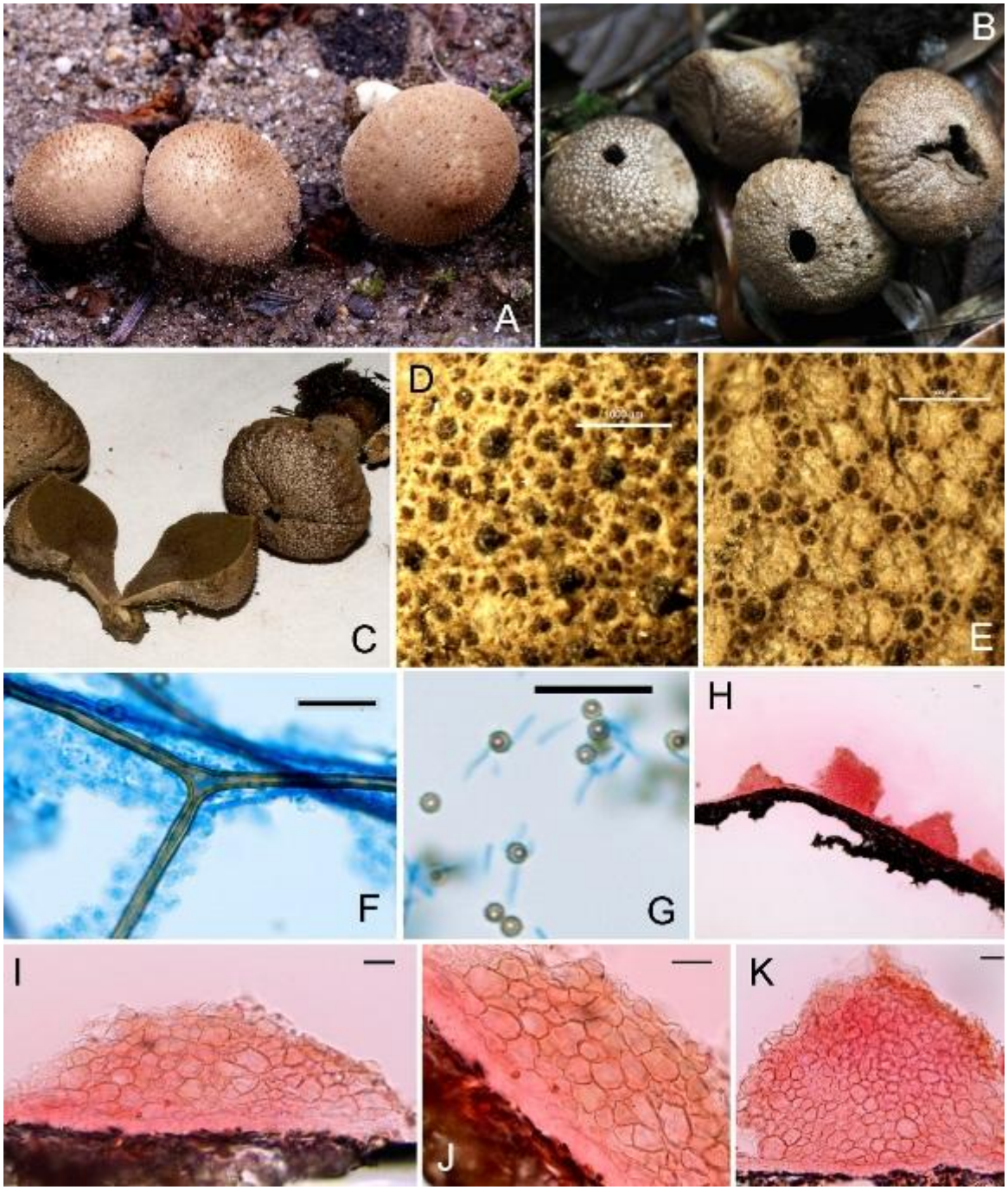

Figure 1: ***Lycoperdon perlatum Pers. var. dobremezianum*** **Kreisel: (KD-G-0036, photographed by K. Das): A. Fresh Basidiomata with slightly attenuated apex; B. Mature basidiomata showing ostiole; C. Longitudinal section showing gleba and subgleba; D. Exoperidium showing small and large verrucae; E. Characteristic reticulum and buff-colored depression on exoperidium; F. Thick-walled branched capillitium; G. Basidiospores with pedicels; H. Cross-section through exoperidium showing verrucae; I, J & K. Cross-section of exoperidial verrucae showing cellular component. Bars: D-E = 1000 µm (1 mm), F-K = 20 µm.**

Basidiospores 3.3-4.1 µm, globose, verrucoid, sometimes pecillate (pedicels up to 10 µm long); verrucae conical up to 0.35 µm long. True capillitium abundant up to 6 µm wide, long, aseptate, strongly branched, olive-grey to grey, thick walled; wall up to 1.2 µm thick, never pitted. Paracapillitium abundant, thin walled. Exoperidial verrucae (spines) cellular; cells 10-30 x 8-25 µm, globose to ellipsoid or sometimes irregular, thin-walled.Clamp connections absent.
Habit and Habitat: Gregarious on the ground in temperate mixed forests dominated by *Lithocarpus*.
Distribution: Nepal, India.
Specimens exmined: India: Sikkim: West district, Ribdi diversion, 2366 m, N 27°10'10.6" E 88°06'52.5", 1 July, 2008, *K. Das*, KD-G-0036 (BSHC); ibid.: North district, between Chungthang and Charten, 2542 m, N 27°42'17.6" E 88°33'37.7", 4 Sept., 2012, *K. Das*, KD 12-266 (BSHC).
Notes: *Lycoperdon perlatum* var. *dobremezianum* is not so common in Sikkim. The macromorphological features like, pyriform basidiomata with slightly attenuated apex, exoperidium with small and larger verrucae and presence of distinct pattern of reticulum on mature exoperidium, place the present taxon under *Lycoperdon perlatum* Pers. But, comparatively shorter verrucae (verrucae larger, 1-2 mm long in var. *perlatum*, Pegler *et al.*, 1995) and absence of pits in the capillitium (always pitted in var. *perlatum* Dring 1964, Pegler *et al.*, 1995, Calonge 1998) undoubtedly separates the present variety from var. *perlatum* (Kreisel 1976).

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