= Lactarius rupestris =

Lactarius rupestris is a species of mushroom in the Russulaceae family . Described as a new species in 2010 , it is known only from the semi @-@ arid region in the National Park of Catimbau of Brazil . The mushroom is characterized by a stout fruit body with a smooth and sticky orange cap up to 7 cm (2 @.@ 8 in) in diameter . The gills on the underside of the cap are closely spaced and frequently anastomosed . The stem is 35 ? 45 mm (1 @.@ 4 ? 1 @.@ 8 in) long by 18 ? 21 mm (0 @.@ 71 ? 0 @.@ 83 in) thick . The mushrooms exude a sparse cream @-@ colored latex when cut or injured .

= = Discovery and classification = =

The species was found in the Brazilian semi @-@ arid region in the National Park of Catimbau , in July 2007 . It was described as new to science in a 2010 Mycotaxon publication by Felipe Wartchow of the Universidade Federal de Pernambuco . L. rupestris is one of 19 species of Lactarius known from Brazil . The epithet rupestris refers to the campos rupestres montane savanna ? the ecoregion where the type species was collected .

The authors note that the fungus does not readily fit into any of the infrageneric (i.e. , below the level of genus) classification schemes outlined by previous authorities . For example , although L. rupestris has several characteristics that make the section Edules proposed by Annemieke Verbeken a somewhat close match , the taxon cannot be included because the surface of its cap is neither sufficiently areolate (cracked) nor dry enough , and its spores are excessively ornamented in comparison .

= = Description = =

The cap of L. rupestris is 60 ? 70 mm (2 @.@ 4 ? 2 @.@ 8 in) , concave to somewhat funnel @-@ shaped , with a central depression . Its color is orange at the center to brownish @-@ orange towards the margin . The cap surface is somewhat sticky , and the texture is either smooth to slightly cracked . It has an indistinct layer of matted mycelial " hairs " . The margin lacks striations and grooves , and is curled inward slightly . The gills are slightly decurrent (running slightly down the length of the stem) , cream @-@ salmon in color , and crowded closely together . They are up to 3 mm (0 @.@ 12 in) broad and are frequently branched . The gill edges are smooth , and the same color as the gill face . There are several tiers of lamellulae (short gills that do not extend fully from the cap margin to the stem) interspersed between the gills . The stem is 35 ? 45 mm (1 @.@ 4 ? 1 @.@ 8 in) long by 18 ? 21 mm (0 @.@ 71 ? 0 @.@ 83 in) thick , centrally attached to the stem , cylindrical , and tapers slightly near the base . It is pale ochraceous @-@ salmon , and slight longitudinal ribs can be seen with a magnifying glass . The flesh is spongy , pale yellow @-@ ochre in the cap , and cream @-@ yellow in the stem . The latex is cream @-@ colored to roughly the same color as the gills , and not abundant .

= = = Microscopic characteristics = = =

The spores are roughly ellipsoid to roughly spherical , and typically measure 7 ? 8 @.@ 5 by 6 ? 7 µm . The ornamentation on the spore surface is amyloid (staining blue to blue @-@ black in Melzer 's reagent) and finely wart @-@ like , with each wart ranging to 0 @.@ 5 ? 0 @.@ 7 µm high . The warts are interconnected by thin ridges , but the ridges do not form a complete reticulum . The hilar appendage (the part of a spore once attached to the basidium via the sterigma) ranges in shape from narrowly obtuse to somewhat conical ; the plage is not very distinct , but has an amyloid spot . The basidia (spore @-@ bearing cells in the hymenium) are 35 ? 50 by 8 ? 11 µm , club @-@ shaped , and bear mainly four , but sometimes two long (6 ? 10 µm) sterigmata .

Pseudopleurocystidia are very scarce on the gill faces ; when present , they are thin @-@ walled , 170 µm long by 24 µm wide , with brownish refractive contents , and arise from deep in the tissue of

the hymenophore . The edge of the gill is sterile (lacking basidia) , and has marginal cells that are 30 ? 45 by 4 ? 6 µm , cylindrical to somewhat sinuous (curvy) , thin @-@ walled , and hyaline (translucent) . The tissue of the cap has abundant sphaerocysts (spherical , swollen cells common to the Russulaceae) and measure 25 ? 65 by 24 ? 50 µm , in addition to filamentous hyphae that are up to 10 µm wide . Lactiferous (latex @-@ containing) hyphae are common in the cap tissue . They are up to 15 µm wide with a longitudinal orientation . Although they diverge from the trama somewhat (spreading out from the center of the gill) , they do not form projecting pseudocystidia . The subhymenium (the layer of cells directly under the hymenium) is made of club @-@ shaped to nearly spherical cells that are 16 ? 27 by 9 ? 17 µm . The tissue that comprises the hymenophore is made of several parts . It contains abundant , nearly isodiametric (17 ? 25 by 13 ? 18 µm) cells , and filamentous hyphae that measure 3 @.@ 5 ? 6 @.@ 5 µm ; lactiferous hyphae are frequent , up to 7 ? 12 µm wide , straight and only occasionally branching . The cap cuticle is a trichoderm ? meaning the outermost hyphae emerge roughly parallel , like hairs , perpendicular to the cap surface . It is up to 140 µm thick and comprises two layers . The upper layer , the suprapellis , is made of plentiful , colorless hyphae that are 20 ? 51 by 4 ? 6 µm , thin @-@ walled (up to 0 @.@ 5 µm) , and range in shape from obtuse to somewhat acute to knob @-@ like or pear @-@ shaped . The lower layer of the cap cuticle , the subpellis , is made of both plentiful hyphae that are 3 ? 8 µm wide and somewhat more inflated colorless cells up to 10 ? 18 µm wide . Lactarius rupestris does not have clamp connections in its hyphae .

= = Habitat and distribution = =

The mushroom was found buried with up to two @-@ thirds of the stem in sandy soil near several shrubs (Fabaceae subfamily Mimosoideae and others) in a semi @-@ arid region , after heavy precipitation . The species is known only from the type locality in Vale do Catimbau National Park in Brazil , in the state of Pernambuco . It fruits at an elevation of 900 to 1 @,@ 000 m (3 @,@ 000 to 3 @,@ 300 ft) . This is part of the biodiverse cerrado ecoregion , in an area known as the campos rupestres . Although the fungus is suspected to be mycorrhizal (like all Lactarius) , there was a wide diversity of plant species growing in the open , dry forest where the mushroom was found (including members of the tree families Euphorbiaceae , Fabaceae , Myrtaceae , Nyctaginaceae , and Polygonaceae ? all known to form mycorrhizal associations) , so the authors did not speculate on any specific interactions .