

Two new fungus species from Hungary (Basidiomycetes, Agaricales)*

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Abstract – Two new species (*Agaricus annulospecialis* BOHUS, LOCSMÁNDI et VASAS, *Tricholoposporum subgoniospermum* BOHUS et VASAS) are described. *T. subgoniospermum* and the other recently described species are introduced in the *Tricholoposporum* keys made by BARONI (1982) and GUZMÁN, MONTOYA & BANDALA (1994). With 2 figures and one table.

***Agaricus annulospecialis* sp. n.**

(Fig. 1)

Remarks. This apparently new form of *Agaricus* was found in the Mályvádi-erdő (forest) at Gyula (Békés county, SE Hungary). The probability of finding an unknown species has already been raised on the field. Several fruit bodies were observed on the field with individuals in different stages of development. Taking the young snow-white specimens in the hand the characteristic rimmed structure of the ring was striking. On the basis of this we tried to assign it to *Xanthoderma* sectio, without analysing further criteria. The collar structure of the unknown species reminded us of the ring of *A. pilatianus* or *A. pseudopratisensis*. Cutting the mushroom, however, we did not observe intense yellowing at the base of the stem and the odour was not unpleasant chemical-like, that is, the quality of the fruit body resembled more the members of the *Arvenses* sectio. The white colour of the fruit body turned yellow after 1–2 hours of storage, later turned to rusty yellow which is also typical of the *Arvenses*, especially the *Silvicolae* members. Our first impressions were changed by the structural changes in the collar of the older specimens. Young specimens have a rimmed straight standing collar which is changing later. The lower weaker general veil disappears and the collar is then pendent. Thus the mushroom reminds us more some species of the *Silvicolae* subsectio. Schäffer test reaction being positive, the *Xanthoderma* relation was finally excluded.

Diagnosis latina. Fungus in vicinitate *Agarici silvicolae*. Proprietates differtae: Pileus primo niveoalbus, deinde vivido luteus (citrinus lepidoflavus vel ochraceo flavus). Lamellae primo vivido roseae. Annulus specialis: primo non pendens cum una acie in

* *Agaricus* Studies XIV.

medio parte, deinde pendens. Odor non specialis. Cheilocystidia clavata, late clavata, $18\text{--}22 \times 7\text{--}8 \mu\text{m}$. Sporae: $6.6\text{--}7.1 \times 4.4\text{--}5 \mu\text{m}$. Habitatio: vero, in querceto, in area raro inundata.

Description. Pileus: 5–10 cm across, long convex, snow-white at first, then after some hours changing to a rather vivid yellow (lemon yellow, deep yellow) then ochraceous yellow, when handled becoming slowly rusty brownish or brownish, especially towards the margin light ochre squamulose-floccose, margin radially fibrillose. – Lamellae: at first vivid rosy, finally chocolate brown. – Stem: 5–10 cm long, 0.8–1.3 cm thick, more or less bulbous, colour and its changing as at the cap, on the surface with velum flocci. Ring distinctive: at first not pendant, medially with an edge similar to some Xanthodermatei species (therefore velum partiale and universale meeting in an edge),

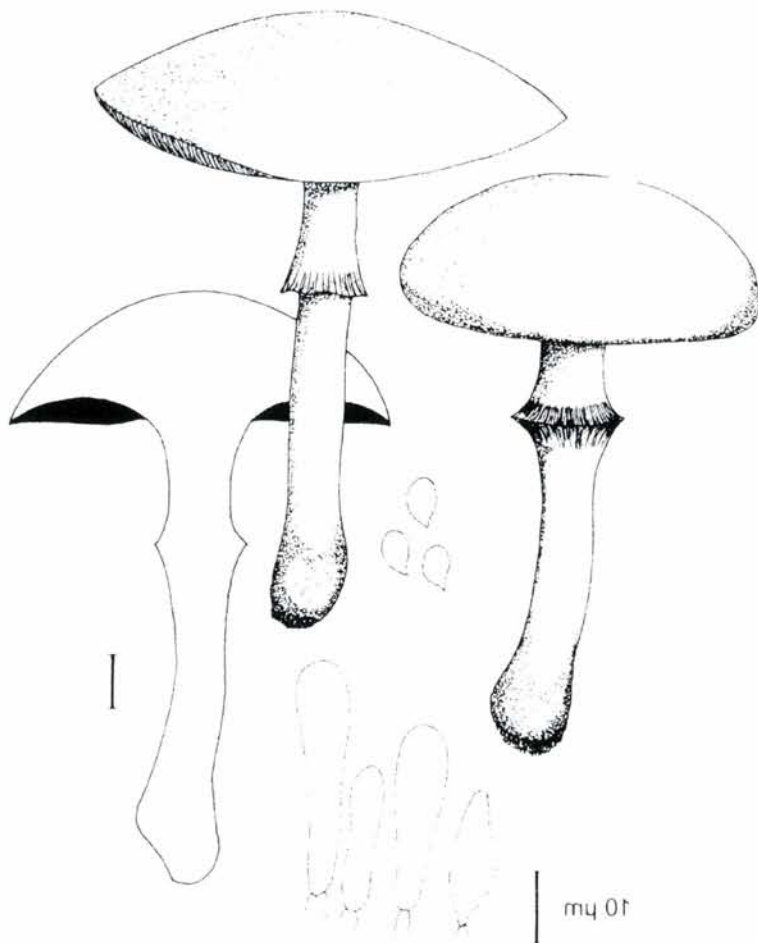


Fig. 1. *Agaricus annulospecialis* sp. n. fruitbodies, spores, cheilocystidia

later pendant, on the underside without squamae. – Flesh: white, light yellowing only more or less towards the stem base. Schäffer reaction positive. Smell weak, not characteristic. – Spores: widely ellipsoid-ovoid, $6.6\text{--}7.1 \times 4.4\text{--}5$ μm . – Cheilocystidia: clavate, later clavate, $18\text{--}22 \times 7\text{--}8$ μm . – Occurrence: it was found in one spot of the type locality which was an oak wood.

Holotypus. 91968 in Herbario Mus.Hist.-nat.Hung. Gyula, Mályvádi-erdő, in querceto, 27.IV.1998., leg. Cs. LOCSMÁNDI et G. VASAS.

THE POSITION OF THE NEW SPECIES IN THE SECTION ARVENSES

- | | | |
|----|--|------------------------|
| 1 | Spores relatively large: 10–14 μm long | subsectio Macrospori |
| – | Spores smaller | 2 |
| 2 | Cap, already when young, ochre yellow, ochre brown, vinaceous brown, reddish lilac, purple | subsectio Augusti |
| – | Cap of other colours | 3 |
| 3. | Stem bulbous. Growing in woods. (Stem bulbous also at <i>A. amanitaeformis</i> , <i>A. arvensis</i> ssp. <i>macrolepis</i> and <i>A. pseudoumbrella</i> in subsectio Arvensis) | subsectio Silvicolae |
| – | Stem not bulbous (except <i>A. arvensis</i> ssp. <i>macrolepis</i> and <i>A. pseudoumbrella</i>) | 4 |
| 4 | With squat habitus. Not occurring in woods. Schäffer reaction negative | subsectio Spissicaules |
| – | Not of squat habitus (except of <i>A. amanitaeformis</i>) | 5 |
| 5 | Species occurring in grassy places: in meadows, pastures, gardens, parks | subsectio Arvenses |
| – | Species occurring in woods, parks | subsectio Aestivales |

POSITION OF THE SPECIES IN THE KEY OF THE SUBSECTION SILVICOLAE

The key of BOHUS (1995) should be complemented in the following way:

- | | | |
|---|--|---|
| 1 | Flesh reddening on the cut surface and yellowing in the stem basis | <i>A. silvicolae-similis</i> BOHUS et LOCSMÁNDI |
| – | Not so | 2 |

- | | | | |
|---|--|--|---|
| 2 | Stem thick: 2–3 cm | | 3 |
| – | Stem thinner | | 4 |
| 3 | Spores smaller: 5–6.5 × 4–5 mm | <i>A. tenuivolvatus</i> (MOELLER) MOELLER | |
| – | Spores larger: 7–8 × 4.5–5 mm | <i>A. macrocarpus</i> (MOELLER) MOELLER | |
| 4 | Stem marginately bulbous. Lamellae at first pale, then greyish rosaceous | | |
| | | <i>A. essettii</i> BON | |
| – | Not so | | 5 |
| 5 | Lamellae at first vivid rosy. Ring at first not pendant and medially with an edge. Cheilocystidia widely clavate | | |
| | | <i>A. annulospecialis</i> BOHUS, LOCSMÁNDI et VASAS, sp. n. | |
| – | Lamellae at first pale then light fleshy rosy. Ring pendant at first, too. Cheilocystidia roundish | <i>A. silvicola</i> (VITTADINI) SACCARDO | |

***Tricholosporum subgoniospermum* sp. n.**

(Fig. 2)

Historical review. Among the European and Asian references on *Tricholoma goniospermum* BRESADOLA (1892) s.str. we consider authentic the collection and publication of JOSSERAND (1949). This is based on the rich collected material and the careful description. His communication on the occurrence of this species was especially interesting. According to him it was frequent in a particular region (Lussan environs) in France. At that time, it was unknown from other areas. According to the above mentioned reference, this species is productive year-by-year and could be collected from under *Quercus ilex*, *Juniperus communis* and *J. oxycedrus*. These occurrences indicate a Mediterranean character of this species. JOSSERAND (1949) mentioned as an interesting observation that although the local people collected and consumed this species over several generations, but it was not known to mycologists.

The following data may be accepted to refer to *T. subgoniospermum* sp. n. The collection of VASSILIEVA (1973) from the Pacific coast of Asia represents its most distant occurrence. The detailed description allows the identification even without herbarial material. Among the European publications, the monograph of BON (1974) mentioned a form which may be identified on macroscopical features of the description as *T. goniospermum*, while microscopical features indicate that it belongs to a new species, *T. subgoniospermum*. The latter preparations were analysed by BON (1974) on the exsiccatum of a specimen collected in Trento environs. As regards the material of CETTO (1979), the description was probably made after BRESADOLA (1892) (e.g. spore dimensions were given by BRESADOLA (1892) as 8–10×5–7 mm) and thus the quality of the cap surface as

“nicht schmierig” (not viscid) is, according to us, not in accordance with his illustration on his table 130 (CETTO 1979). A number of the collectors attribute this form the autumn variety of *Calocybe gambosa*, as the latter appears on the same locality. We find a photograph of this species in the work of MARCHAND (1986: 837) as well which is, however, not fully satisfactory because the photograph was not taken on the collecting spot in

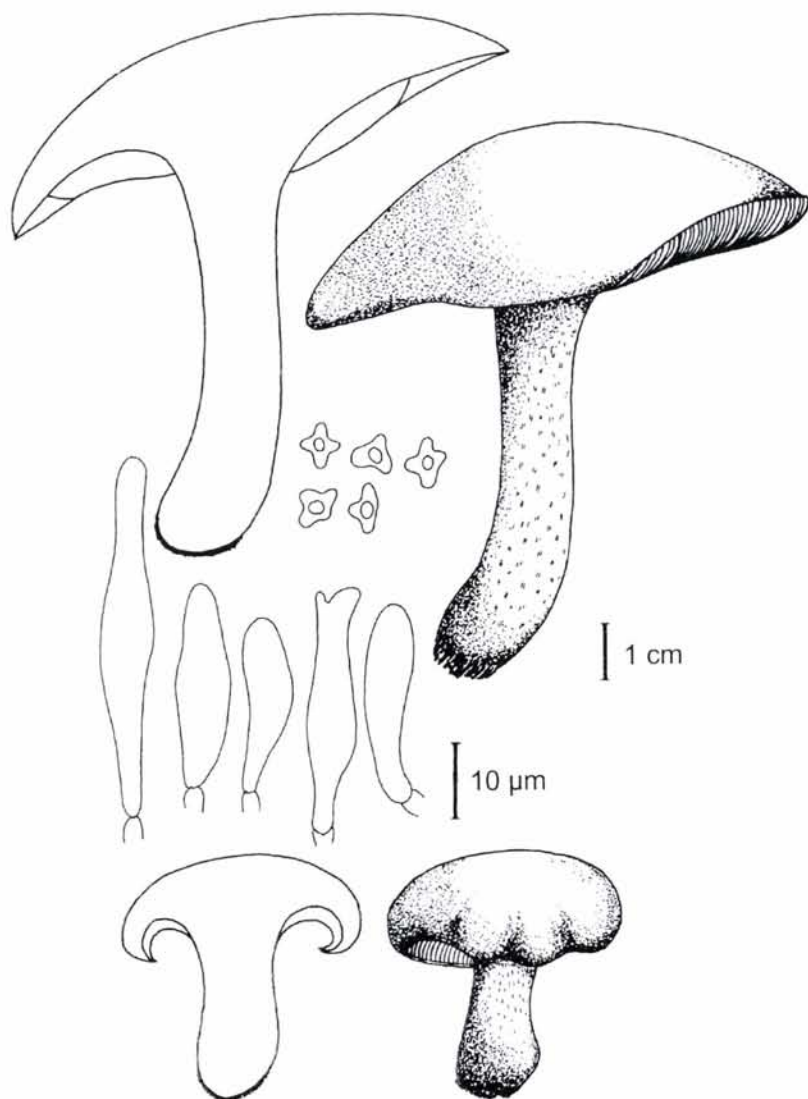


Fig. 2. *Tricholosporum subgoniospermum* sp. n. fruitbodies, spores, cheilocystidia

“ungerührt” (without touch) state of the fungus, but on the exhibition of the Société Mycologique de France in Trento, 1968. The best representation of this species is found in the monograph of RIVA (1988: 68), depicting this fungus in “ungerührt” (without touch) state as a characteristic representative of the *Tricholosporum* taxon.

The validity of *T. tetragonosporum* MAIRE (1945) as a separate species has been debated by some mycologists. According to JOSSERAND (1949), it is a form of *T. goniospermum* (“une simple forme”). According to BON (1974) it is synonymic to *T. goniospermum*. A publication of BOHUS (1985) supported this view. There were also some uncertainties about the new species, but on a closer observation some specific characteristics were found (see Table 1 with diagnostic features of this group).

Diagnosis latina. Fungus differt a *Tricholomate goniospermo* (apud BRESADOLA 1892, apud JOSSERAND 1949 et pro parte apud BON 1974) in pileo viscido, carne vivido luteo in vicinitate lamellarum, in brunnescentia lamellarum et stipitis. Sporae minores: 5–7.8 × 4.6–6.2 mm. Cheilocystidia adsunt. Habitatio: magis vero, in silva frondosa.

Description. Pileus: 6–15 cm across, semiglobate, then flattening, compact, fleshy, colours when not touched; ochre or yellow to lemon-yellow, browning when handled, viscid, locally more or less shiny, naked. Margin young involute. Cuticle may be more or less peel. – Lamellae: form as those of *Tricholoma*, very crowded, light ochre, a greyish whitish, greyish, finally with a light lilac nuance, after drying (the preparation) with a roseate-lilac tinge, slowly browning. – Stem: 5–9 cm long, 0.8–2 cm thick, cylindrical, it may be bulbous, white, browning when handled, towards the apex with a *Hebeloma sinapizans*-like structure (Lupe) or mealy or smooth. – Flesh: whitish, in the neighbourhood of the lamellae lively yellow, on the cut-surface it may be yellowing. – Smell: not characteristic. – Spores: 5–7.8 × 4–6.2 mm, stauriform or cruciate. – Cheilocystidia: fusiform, langeniform or basidioid, 20–50 × 6–8 mm. – Clamps: present especially in hymenial trama. – Epicutis: hyphae 2–3 mm wide. – Occurrence: in spring, in frondose wood. – Remark: the colour of the lamellae may be somewhat violaceous-lilaceous at some gatherings.

Table 1. Delimitation of the *Tricholosporum* species occurred in Europe and North-Africa

	<i>subgoniospermum</i> BOHUS et VASAS, sp. n.	<i>goniospermum</i> BRESADOLA	<i>goniospermum</i> BRESADOLA apud JOSSERAND	<i>tetragonosporum</i> MAIRE
Pileus	viscid	not viscid	not viscid	not viscid
Lamellae	browning when handled	not browning when handled	not browning when handled	not browning when handled
Stem	browning when handled	not browning when handled	not browning when handled	not browning when handled
Flesh colour on cut-surface	vivid yellow near lamellae	not yellow	not yellow	not yellow
Spores	5–7.8×4.7–6.2 mm	8–10×5–7 mm	8–8.5×6–6.5 mm	6–7×4–5 mm
Cheilocystidia	present	absent	absent	absent
Epicutis hyphae	2–3 mm wide		5 mm wide	3–4 mm wide
Clamps	present		few	present

Holotypus. 91969 in Herbario Mus.Hist.-nat.Hung., Budapest, Montes Budai-hegység: Látó-hegy, in Corno-Querceto, 28.V.1998., leg.: L. LŐKÖS et D. LŐKÖS.

Paratypes. 91969 in Herbario Mus.Hist.-nat.Hung., Budapest, Montes Budai-hegység: Látó-hegy, in Corno-Querceto, 28.V.1998., leg.: L. LŐKÖS et D. LŐKÖS; in localita incognita Hungariae, 26. V.1957., leg.?: Budapest, Montes Budai-hegység (Csillebérc), 19.V.1965., leg. FERENCZ et ERDEI; Budapest, Montes Budai-hegység (Fenyőgyöngye), in silva mixta, 23.VI.1965., leg. FERENCZ; Budapest, Montes Budai-hegység, 21.V.1972., leg. KALOCSA; Budapest, Montes Budai-hegység (Remete-hegy prope Óbuda), 20.VII.1975., leg. KALOCSA; Budapest, Kamaraerdő, in silva frondosa mixta, 2.VI.1984., leg. NEHÉZ; Budapest, Montes Budai-hegység (Normafa), in silva frondosa, 25.V.1995., leg. ALBERT.

KEY TO THE GENUS *TRICHOLOSPORUM*

The keys of BARONI (1992) and GUZMÁN *et al.* (1994) are complemented in the following way:

- | | | |
|---|--|--|
| 1 | Species growing in the Temperate zone and in the Mediterranean | 2 |
| – | Species growing in other regions | 4 |
| 2 | The characteristic violaceous, lilac, rose tint not perceptible on the lamellae. Pileus 8 cm across, not viscid. Lamellae not browning when handled. Flesh without any yellow colour. Spores 6–7.4–5 mm. Cheilocystidia absent. Only one gathering. In North Africa: Algeria | <i>T. tetragonosporum</i> MAIRE |
| – | The violaceous, lilac, rose colours or nuances are present on the lamellae | 3 |
| 3 | Spores large: 8–10 × 5–7 mm. Lamellae not browning when handled. Flesh without any yellow colour. Cheilocystidia absent. Pileus 5–10 cm across. In the Mediterranean: Italy, France | <i>T. goniospermum</i> BRESADOLA |
| – | Spores smaller: 5–7.8 × 4.7–6.2 mm. Lamellae browning when handled. Flesh in the neighbourhood of the lamellae lively yellow. Cheilocystidia present. In Europe and Asia | T. subgoniospermum BOHUS et VASAS, sp. n. |
| 4 | Fungus growing in tropical plantations in Mexico. Pileus 5.8 cm across, bluish violaceous to greyish violaceous. Spores 4.5–5 × 3.2–4 (4.4) mm. Cheilocystidia present | <i>T. tropicale</i> GUZMÁN, BANDALA et MONTOYA |
| – | Fungus growing elsewhere | 5 |
| 5 | Species with smaller spores: 4–5 (5.5) mm long | 6 |
| – | Species with greater spores: 5–8.5 mm long | 7 |

- 6 Pileus pale violaceous. Cheilocystidia present, mucronate. Pileus to 3 cm across. Spores $4.8\text{--}5.5 \times (3.2)4\text{--}4.8(5.5)$ mm. Subtropical species. In North America
T. pseudosordidum (SINGER) BARONI
- Pileus dark violaceous. Cheilocystidia not differentiated. Pileus 2–4 cm across. Spores $4\text{--}5.5 \times 3\text{--}4(5)$ mm. In North America *T. atroviolaceum* (MURILL) BARONI
- 7 Pileus 2–6 cm across, violaceous. Cheilocystidia present, $17\text{--}37$ μm long. Spores $5.6\text{--}8.4$ mm long. Tropical species. In Mexico
T. subporphyrophyllum GUZMÁN
- Fruit body greater 8
- 8 Pileus 5.5–15 cm across. Cheilocystidia absent. Spores $5.6\text{--}7.2$ mm long. In the temperate zone of Japan *T. porphyrophyllum* (IMA) GUZMÁN ex BARONI
- Pileus 7–16 cm across. Cheilocystidia present and the greatest in this genus: $26.6\text{--}48.4$ mm. Subtropical species. In Mexico *T. longicystidiosum* GUZMÁN

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