

Tulloss DRAFT - July 4, 2008 12:14 pm - Tulloss DRAFT

AMANITA SUBNUDIPES (Romagn.) Tulloss. 2000. *Mycotaxon* 75: 330.

≡ *Amanita crocea* var. *subnudipes* Romagn. 1982. *Bull. Trimestriel Soc. Mycol. France* 98(2): 166.

≡ *Amanitopsis crocea* var. *subnudipes* (Romagn.) Wasser. 1992. *Fl. Fung. Ucrainicae, Basidiomycetes, Amanitales*: 152.

Illus.: Moser and Jülich. 1988. *Farbatlas Basidiomyc.* 5: III *Amanita* 3 [as "*A. crocea*," top plate].

Figs. 9-10

PILEUS: 30 - 80 mm wide, relatively pale pure orange, slightly more intensely colored over disc, conic at first, becoming convex, mat; *context* not described; *margin* striate; *universal veil* absent.

LAMELLAE: free, subcrowded, whitish; *lamellulae* infrequent.

STIPE: white or very pale, lacking colored fibrillose squamules characteristic of var. *crocea*, fragile; *context* hollow; *exannulate*; *universal veil* as saccate volva, white, membranous, thin, tall, persistent.

Odorless. *Taste* not recorded.

MACROCHEMICAL TESTS: none recorded.

PILEIPELLIS: 105 - 130 μm thick, colorless near surface, otherwise yellow to orangish yellow, fully gelatinized only at surface; filamentous, undifferentiated hyphae 2.5 - 12.8 μm wide, branching, densely packed, dominantly subradially arranged, also with criss-crossing fascicles, occasionally with yellowish subrefractive walls; vascular hyphae 3.8 - 15.4 μm wide, branching, common, sinuous, with irregular outline, locally in complex knots or tangles. PILEUS CONTEXT: filamentous, undifferentiated hyphae 1.8 - 11.0 μm wide, branching, plentiful, in fascicles, with fascicles forming loosely interwoven lattice; acrophysalides badly collapsed and broken, clavate, up to $78 \times 35 \mu\text{m}$ and probably larger, plentiful(?), wall thickness not assessable; vascular hyphae 4.0 - 19.0 μm wide, branching, relatively common, with frequent abrupt constrictions. LAMELLA TRAMA: bilateral; not rehydrating. SUBHYMENIUM: not rehydrating; with apparent badly deteriorated inflated cells giving rise to basidia in small area of one section. BASIDIA: $41 - 62 \times 10.0 - 14.5 \mu\text{m}$, 4-sterigmate; clamps not observed (searches of numerous sections made, but tissue badly damaged). UNIVERSAL VEIL: On pileus: over much of surface as scattered gelatinized fragments consistent with structure of interior of limb on stipe base [e.g., collapsed (flattened) and gelatinized cell $140 \times 102 \mu\text{m}$]. On stipe base, exterior surface: substantial layer several hyphal diameters thick; filamentous, undifferentiated hyphae 3.2 - 10.0 μm wide, branching, many with sublongitudinal orientation, singly and in narrow fascicles forming loosely interwoven lattice, almost all collapsed; vascular hyphae 5.5 - 19.5 μm wide, infrequent, infrequently branching, fragmented, partially gelatinized in spots.

On stipe base, interior: filamentous, undifferentiated hyphae 2.0 - 12.8 μm wide, branching, dominant, singly and in often rather broad fascicles forming open lattice; inflated cells scattered, very infrequent, subglobose to broadly clavate to clavate, up to $120^{\pm} \times 52 \mu\text{m}$; vascular hyphae 4.2 - 14.0 μm wide, infrequent. On stipe base, inner surface: in some regions like interior but partially gelatinized, other regions comprising very thin layer of sublongitudinally oriented filamentous, undifferentiated hyphae; inflated cells on surface collapsed, scattered, infrequent, up to $141 \times 50 \mu\text{m}$; inflated cells free in mount gelatinized, numerous, yellowish or orangish, possibly(?) from friable part of limbus internus or remains of layer of inflated cells from lamella edge on limbus internus surface. STIPE CONTEXT: longitudinally acrophysalidic; filamentous, undifferentiated hyphae 3.5 - 10.2 μm wide, branching, plentiful; acrophysalides dominant, thin-walled, up to $298 \times 39 \mu\text{m}$; vascular hyphae 3.8 - 9.8 μm wide, scattered, infrequently branching, sinuous, locally with numerous abrupt constrictions, locally in coils and tangles. INFLATED CELLS ON LAMELLA EDGE: frequent and extended remains of layer up to 56 μm thick; cells densely packed (specimen fully mature when dried), in 3 - 4 layers, up to $20 \times 22 \mu\text{m}$, partially gelatinized and collapsed, with few strands of filamentous, undifferentiated hyphae 4.6 - 5.2 μm wide, radially oriented, partially gelatinized.

BASIDIOSPORES: [80/2/1] (9.5-) 10.0 - 12.8 (-14.5) \times (7.8-) 8.8 - 11.2 (-13.2) μm , (\mathbf{L} = 11.1 - 11.2 μm ; \mathbf{L}' = 11.1 μm ; \mathbf{W} = 9.6 - 9.8 μm ; \mathbf{W}' = 9.7; \mathbf{Q} = (1.05-) 1.07 - 1.28 (-1.52); \mathbf{Q} = 1.14 - 1.16; \mathbf{Q}' = 1.15), hyaline, colorless, smooth, thin-walled, inamyloid, subglobose to broadly ellipsoid, occasionally ellipsoid, rarely globose, adaxially flattened, occasionally expanded at one end; apiculus sublateral, cylindrical; contents granular to multi- or monoguttulate; white in deposit.

Habitat: Often common in deciduous forests.

Collection examined: **FRANCE**: DÉP. OISE - Apremont, 27.vii.1953 H. Romagnesi 53.114 (holotype, PC (*in herb.* Romagnesi)).

DISCUSSION: For comparison to *A. romagnesiana*, see discussion following description of that taxon.

This taxon is very close to *A. crocea* var. *crocea* in anatomy of its universal veil and pileipellis (see discussion under *A. romagnesiana*, above). In addition, the small, subglobose, gelatinized cells floating in the mount of the universal veil of *A. subnudipes* are also to be seen in analogous mounts for *A. crocea*. These cells appear to be related to the layer of deciduous, subglobose to globose cells which can be found on the edges of lamellae in *A. subnudipes* and in *A. crocea* (see discussion following the description of *A. romagnesiana*).

Fortunately, a collection of A. subnudipes was located that could be used to further investigate the structure of the lamella trama and the shape of the spores. The collection in question is illustrated by a color photograph in (Moser and Jülich, 1988: III *Amanita* 3) where it is labeled "*A. crocea*."

Habitat of additional collection: Sardinia, Italy: With *Quercus suber* L.

Additional collection examined: **ITALY**: SARDINIA—Cantoniera Catala, ca. Calangianus, 1.xi.1983 M. Moser 83/515 (IB).

While the specimens of Moser 83/515 are immature, one had begun sporulation at the time it was dried; and the following spore data were obtained: [20/1/1] (6.2-) 8.0 - 10.9 (-11.9) \times (5.5-) 7.5 - 9.6 (-10.0) μm ; **L** = 9.6 μm ; **W** = 8.6 μm ; **Q** = (1.03-) 1.04 - 1.18 (-1.20); **Q** = 1.12. The distribution of spore size was skewed to the low side suggesting that the value of **Q** at maturity would be > 1.12 .

Additional observations: PILEIPPELLIS: 100 - 105 μm thick, gelatinized only at surface, with vascular hyphae present. PILEUS CONTEXT: vascular hyphae locally common. LAMELLA TRAMA: bilateral; $w_{\text{cs}} = 50 - 55 \mu\text{m}$; subhymenial base shallow, dominated by filamentous, undifferentiated hyphae and narrow inflated elements (clavate to subcylindric to fusiform, sometimes in chains, up to $47 \times 14.1 \mu\text{m}$, sometimes penetrating subhymenium) diverging at shallow angle; central stratum including intercalary slightly inflated narrowly fusiform cells (e.g., $55 \times 15.0 \mu\text{m}$); filamentous, undifferentiated hyphae μm , 2.8 - 8.5 μm , branching; terminal, divergent inflated cells not observed; vascular hyphae not observed. SUBHYMENIUM: $w_{\text{st-near}} = (35\text{-}) 50 - 65 \mu\text{m}$; $w_{\text{st-far}} = 60 - 85 \mu\text{m}$; branching structure of uninflated and partially inflated and branched hyphal segments and small inflated cells, with occasional hyphal segments running subparallel to central stratum, with basidia mostly arising from hyphal segments, occasionally arising from inflated cell, rarely from elongate element of subhymenial base. BASIDIA: $48 - 71 \times 12.0 - 15.8 \mu\text{m}$, dominantly 4-, rarely 1-sterigmate, with sterigmata up to $6.5 \times 4.8 \mu\text{m}$; clamps not observed. INFLATED CELLS ON LAMELLA EDGE: plentiful filamentous, undifferentiated hyphae interwoven, running along lamella edge; plentiful deciduous inflated cells up to $41 \times 36 \mu\text{m}$, in 5 to 6 layers. MATERIAL ON STIPE SURFACE: [from incompletely expanded basidiocarp] scattered small patches or tufts of tangled, frequently branching, filamentous, undifferentiated hyphae, collapsed, partially gelatinized here and there, with clavate terminal cells up to $40 \times 16.3 \mu\text{m}$.

Romagnesi (1992) proposed the synonymy of *A. crocea* var. *subnudipes* with the type variety. [??] The differences noted between the two taxa are in pileus color, stipe color and decoration, and spore shape [**Q** = 1.12 - 1.16 vs. **Q** = 1.07 - 1.10 (-1.11)].

Frequency of vascular hyphae in the stipe context of the present taxon may be overestimated because of the difficulty of distinguishing yellowish subrefractive hyphae of a mold from vascular hyphae of the *exsiccata*. Unfortunately both specimens of the holotype are beginning to be degraded by numerous spots of mold.

Amanita vaginata var. *aurantiaca* Grelet [1923. *Amateur Champignons* 9(4): 52] was suggested as a synonym of *A. crocea* by Fraiture (1993). Considering the pileus coloration and relatively undecorated stipe described in the protologue of the Grelet taxon, it is possible that *A. vaginata* var. *aurantiaca* is a taxonomic synonym of *A. subnudipes*. I would be very interested in hearing from any reader who knows the whereabouts of a collection of *A. vaginata* var. *aurantiaca* determined by Grelet. The protologue cites collections from the Grenatière near Savigne (Vienne) and from near Lavausseau (Vienne).

After completing a study of all types in the "*Amanita crocea*-complex," it seems justifiable to raise *A. crocea* var. *subnudipes* to specific rank.