

# NEW SPECIES OF THE GENUS *CLAVARIA* (*CLAVARIACEAE*, *BASIDIOMYCETES*) FOR THE TERRITORY OF SLOVAKIA IN THE COLLECTIONS OF THE SLOVAK NATIONAL MUSEUM – NATURAL HISTORY MUSEUM (BRA).

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**Abstrakt:** *Nové druhy rodu Clavaria pre územie Slovenska v zbierkach Slovenského národného múzea-Prírodovedného múzea (BRA). V rámci výskumu mykoflóry nelesných biotopov Slovenska, bolo od roku 1998 zistených viacero druhov kyjačikov (Clavaria) nových pre naše územie. Článok prináša zoznam položiek týchto druhov uložených v mykologickom herbárii SNM-PM. Pri každom druhu je uvedený opis s údajmi o ekológii a známom rozšírení.*

**Key words:** clavarioid fungi, waxcap grasslands, biodiversity

Since 1998 the interest of some mycologists in Slovakia has been focused on the research of fungal diversity of seminatural meadows and pastures, so called waxcap grasslands. Traditionally managed grasslands (hand-mowed meadows and extensively grazed pastures) are now declining in Slovakia, and knowing and understanding diversity and bionomy of all living organisms inhabiting them is vital for their protection. Besides plants and insects, certain groups of fungi are considered to be good indicators of conservation value of grasslands, too. Rald (1985) published the first system for an evaluation of grasslands based on the number of *Hygrocybe* taxa occurring at a site. Nitare (1988) accepted as indicator species of conservation value of grasslands also taxa of *Clavariaceae*, *Geoglossaceae*, *Entoloma* and *Dermoloma*. Since then several other studies were devoted to evaluation of grasslands based on the fungal diversity (Jordal, 1997; McHugh & al., 2001; Evans, 2003, Griffith & al. 2004). In most of these studies clavarioid fungi are considered as valuable indicators of well-preserved, traditionally managed grasslands. However, to be able to evaluate the importance of certain species reliable determination is ultimate and that was the main reason for the ongoing taxonomical research on *Clavariaceae* in Slovakia.

Though Slovakia is a country rich in grasslands no comprehensive research of grassland *Clavaria* taxa has been accomplished. Checklist of non-vascular and vascular plants of Slovakia (Lizoň & Bacigálová, 1998) has data on occurrence of 3 *Clavaria* species (*C. fragilis*, *C. fumosa* and *C. falcata*) and no other species has been reported from Slovakia until recently. Following species with voucher specimens deposited at the herbarium of the Slovak National Museum-Natural History Museum in Bratislava (BRA) has been recorded during the field research of Slovak grasslands since 1998:

## *Clavaria amoenoides* Corner, K.S. Thind & Anand

**Description – Basidiomata** simple, solitary, gregarious or in dense clusters, smooth or slightly ridged, cylindrical or clavate, often contorted, with acute apex, 50–100 mm high, fertile part 3–5 mm thick, dull lemon yellow (1ca) to pale straw yellow, darkening to almost orange with drying, basal part indistinctive up to 2–4 mm thick, paler concolorous, with white mycelium at

the base. Context pale yellow, soft and fleshy, taste and smell indistinctive. Reaction to FeCl<sub>3</sub> dark grey. **Spores** 8.5–8.9 × 5.0–6.3 μm, ellipsoid to oblong, thin-walled, smooth, hyaline.

**Basidia** without clamps.

#### Comments

*Clavaria amoenoides* described by Corner & al. (1956) from India, is one of the less common European *Clavaria* species, well recognized by its yellow colour and absence of clamps on basidia. The species occurs scattered in European countries e.g. in Great Britain (Roberts, 2008), Scandinavia. Only four records of this rare species are known from Slovakia.

#### Foreign specimens:

BRACR13303, Norway, Steinkjer, Mokka, alt.: 350 m, in pasture, leg.: I. Kautmanová, 3.9.2009;

BRACR13261, Norway, Steinkjer, Skrattåsen, alt.: 50 m, in pasture, leg.: V. Kautman, 5.9.2009;

BRACR 16731, Czech Republic, Liberec, Mníšek, alt.: 430 m, in unfertilized mowed meadow, leg.: J. Gaisler, 16.9.2011.

#### Slovak specimens:

BRACR13102, Nízke Tatry Mts., Malužiná village, Michalovo valley, alt.: 750 m, in mowed and grazed grassland, limestones, leg.: I. Kautmanová, 24.8.2002;

BRACR16044, Podtatranská kotlina basin, Hybe village, alt.: 800 m, in mowed meadow, in old orchard near the village, leg.: I. Kautmanová, 2.9.2010;

BRACR15037, Nízke Tatry Mts., Malužiná village, Michalovo valley, alt.: 750 m, in mowed and grazed meadow, leg.: V. Kautman, 19.9.2010;

BRACR16701, Stolické vrchy Mts., Muránska Huta village, Predná Hora, alt.: 810 m, leg.: V. Kautman, 4.10.2011.

### *Clavaria argillacea* Pers.

**Description** – **Basidiomata** simple, solitary or gregarious, cylindrical, sometimes narrowly clavate or forked, rounded at the top, 15–50 mm high, fertile part 2–3 mm thick, hollow when old, dull lemon yellow sometimes with ochraceous tint, paler when drying, basal part distinctive up to 1–2 mm thick, short, shiny, chrome yellow, sometimes with white mycelium at the base. Context yellow, elastic, taste mild, without smell. Reaction to FeCl<sub>3</sub> negative. **Spores** 8.0–8.9 × 5.0–5.3, oblong to subcylindrical, rarely constricted, thin-walled, smooth, hyaline. **Basidia** with loop-like clamps.

#### Comments

*Clavaria argillacea* is common species, growing mostly in costal areas and heaths or peat-bogs in whole Europe. It is supposed to be mycorrhizal with ericaceous plants (Englander & Hull 1980). The species is rather variable in macro- and microcharacters with lot of forms described (Corner, 1950) and the description presented here is based on the material collected in Slovakia in 2008 at the military area of Záhorie region, single known locality until now. Pilát (1958) published *C. argillacea* from several localities in Czech Republic, but no recent records are known.

#### Foreign specimens:

BRACR13653, Estonia, Lahemaa NP, Lääne-Virumaa Co, Vihula Comm, Vainupea, Costal area, alt.: 10 m, close to the border- signpost of Lahemaa National Park, leg.:

- V. Kučera, 8.10.2009;  
BRACR13593, Norway, Steinkjer, Stordalen, Flatanger, alt.: 60 m, in *Sphagnum* in wetland pine spruce forest, leg.: V. Kautman, 4.9.2009 (var. *sphagnophila*);  
BRACR13260, Norway, Stordalen, Flatanger, alt.: 50 m, in spruce rain forest, in *Sphagnum* with *Caluna vulgaris*, leg.: I. Kautmanová, 4.9.2009 (var. *sphagnophila*).

#### **Slovak specimens:**

- BRACR16025, Borská nížina Lowland, Lakšárska Nová Ves village, Bežnisko military area, alt.: 250 m, in sand dunes under *Caluna vulgaris*, leg.: V. Kautman, 18.10.2008;  
BRACR16021, Borská nížina Lowland, Lakšárska Nová Ves village, Bežnisko military area, alt.: 250 m, in sand dunes in *Caluna vulgaris*, leg.: V. Kautman, 18.10.2008.

### ***Clavaria greletii* Boud.**

**Description** – **Basidiomata** solitary, simple, cylindrical, sometimes flattened, rounded at the top, or irregularly clavate, 30–100 mm long and up to 5 mm thick, tapering towards the base. Fertile part black when young, ageing to greyish-black and ash-grey, smooth or finely granulated, 2–5 mm thick. Stipe distinctly separated, smooth, black and shining, 1–2 mm thick. Context greyish, fragile, without smell. Reaction to FeCl<sub>3</sub> negative. **Spores** 7.6–9.1 × 6.5–8.0 μm, subglobose to ellipsoid, smooth, thin walled, sometimes with scattered large warts. **Basidia** with loop-like clamps at the base.

#### **Comments**

In the range of dark-coloured *Clavaria* species, only *C. greletii*, described by Boudier (1917) from France, posses loop-like clamps at the base of basidia. *C. greletii* is extremely rare in Europe, probably overlooked due to its dark colour, small size and preferred habitat in dense grass. However, it is the most common of black *Clavaria* species in Slovakia, recorded at several localities during the last years. Probably the first record of this species in Slovakia was made by Adamčík in 2005 at Hostovické lúky in Laborecká vrchovina Mts. (specimen at the herbarium of the Institute of Botany of the Slovak Academy of Sciences, SAV F-1988).

#### **Foreign specimens:**

- BRACR13285, Norway, Vestfold, Tjome, Moutmarka, alt.: 5 m, in pasture, leg.: I. Kautmanová, 8.9.2009;  
BRACR16384, Ecuador, Union del Toachi village, Otongachi, alt.: 1100 m, in rainforest, on bare soil, leg.: V. Kautman, 28.3.2011.

#### **Slovak specimens:**

- BRACR13111, Malá Fatra Mts., Žilina, Višňové village, alt.: 550 m, in meadow, leg.: L. Jánošík, 21.9.2008;  
BRACR13677, Stolické vrchy Mts., Muráň village, Predná Hora recreation area, alt.: 800 m, in grazed meadow under the ski lift, leg.: V. Kučera, 10.10.2008;  
BRACR13694, Stolické vrchy Mts., Muráň village, Predná hora recreation area, alt.: 790 m, in grazed meadow under the old ski lift, leg.: V. Kautman, 10.10.2008;  
BRACR16023, Zvolenská kotlina Basin, Zvolen town, alt.: 300 m, leg.: M. Zajac, 8.10.2009;  
BRACR 16723, Považský Inovec Mts, Piešťany town, Banka village, alt.: 250 m, in young forest near grazed meadow, leg.: L. Tábi, 11.9.2010;  
BRACR16078, Biele Karpaty Mts., Nová Bošáca village, Blažejová Nature Reserve, alt.: 400 m, in mowed and grazed meadow, leg.: V. Kučera, 17.9.2010;

- BRACR16173, Kremnické vrchy Mts., Kováčová village, alt.: 330 m, in grass in meadow, leg.: S. Glejdura, 3.10.2010;  
BRACR16702, Stolické vrchy Mts., Muránska Huta village, Predná Hora, alt.: 820 m, ski slope, leg.: V. Kučera, V. Kautman, 4.10.2011.

*Clavaria incarnata* Weinm.

**Description** – **Basidiomata** simple, solitary or in small clusters of 2–3, smooth, cylindrical, with apex rounded or slightly subacute, sometimes slightly clavate, 20–80 mm high, fertile part 2–4 mm thick, pink to pinkish, fading with drying to pinkish cream, dried specimens are pale ochraceous, completely lack pinkish tones. Basal part well delimited, up to 2–3 × 3–5 mm, translucent, darker pink than fertile part, or somewhat ochraceous pinkish (5gc, lc), with whitish mycelium at the base. Context pale pink, fragile, watery, taste and smell indistinctive. Reaction to FeCl<sub>3</sub> greyish. **Spores** 6.0–9.3 × 4.5–4.9 μm, ellipsoid to broadly ellipsoid, thin-walled, smooth, hyaline, some thick-walled and minutely warted. **Basidia** with loop-like basal clamps.

**Comments**

This small species is inconspicuous despite its nice pink colour and is probably not so rare as it is overlooked due to its small size and preferred habitat in dense grass. Probably the first record of this specimen was made by Adamčík in 2005 at Osadné in Laborecká vrchovina Mts. (specimen SAV F-2009) and since then it has been recorded in other localities in Slovakia, resulting in number of specimens at BRA.

**Foreign specimens:**

- BRACR12498, Spain, Sukarrieta, Txatxarramendi, alt.: 5 m, in deciduous forest on a small island in a river estuary, leg.: I. Kautmanová, 15.11.2008;  
BRACR12331, Spain, Sukarrieta, Txatxarramendi, alt.: 10 m, in deciduous forest on a small island at the river estuary, leg.: I. Kautmanová, 15.11.2008;  
BRACR12601, Spain, Izurtza, Larrinagatxu, alt.: 50 m, in mosses at the road, leg.: I. Kautmanová, 15.11.2008;  
BRACR16733, Czech Republic, Mělník town, Želízy-Sitne village, alt.: 300 m, in soil under shrubs, leg.: S. Valda, 12.7.2009;  
BRACR13266, Norway, Oppdal, Slettsvol, alt.: 630 m, in deciduous forest, leg.: I. Kautmanová, 7.9.2009;  
BRACR13269, Norway, Buskerud, Nedre Eiker lake, Ryghsettra, alt.: 280 m, in mowed meadow, leg.: I. Kautmanová, 11.9.2009;  
BRACR16734, Czech Republic, Mělník town, Vysoká village, alt.: 305 m, in soil under shrubs, leg.: S. Valda, 31.8.2010;  
BRACR16732, Czech Republic, Mělník town, Vysoká village, alt.: 305 m, in meadow in mosses, leg.: S. Valda, 31.8.2010;  
BRACR15966, Czech Republic, Liberec, Machnín village, loc. Hamrštejn, alt.: 340 m, leg.: V. Kautman, 10.9.2010;  
BRACR16737, Czech Republic, Mělník town, Sřemy village, alt.: 280 m, in grass and mosses, leg.: S. Valda, 11.9.2010;  
BRACR16633, Czech Republic, Liberec, Machnín village, loc. Hamrštejn, alt.: 340 m, leg.: V. Kautman, 9.8.2011.

### Slovak specimens:

- BRACR12845, Javorníky Mts., Púchov, Lachovec hill, alt.: 280 m, in mixed forest, former pasture, leg.: I. Kautmanová, 15.6.2007;
- BRACR9754, Javorníky Mts., Púchov town, Lachovec hill, alt.: 280 m, in mosses under trees at the abandoned pasture, leg.: M. Burian, 30.6.2007;
- BRACR12842, Javorníky Mts., Púchov, Lachovec hill, alt.: 270 m, in mixed forest, former pasture, leg.: I. Kautmanová, 7.7.2007;
- BRACR15972, Západné Tatry Mts, Zuberec village, Mačie Diery Nature Reserve, alt.: 850 m, in mowed meadow in a slope, limestone, leg.: I. Kautmanová, 29.8.2007;
- BRACR13113, Považský Inovec Mts., Piešťany town, Banka village, alt.: 250 m, in dry mowed meadow, leg.: I. Kautmanová, 10.10.2007;
- BRACR13104, Považský Inovec Mts., Piešťany, Banka village, alt.: 250 m, in dry mowed meadow, leg.: V. Kautman, 20.10.2007;
- BRACR16024, Podtatranská kotlina Basin, Hybe village, alt.: 800 m, in mowed and grazed grass in old orchard near the village, leg.: I. Kautmanová, 15.8.2008;
- BRACR12838, Žilinská kotlina Basin, Žilina, city park, alt.: 380 m, in meadow, leg.: L. Jánošík, 26.8.2008;
- BRACR16030, Žilinská kotlina Basin, Žilina town, alt.: 390 m, in city park, in meadow, leg.: L. Jánošík, 18.10.2008;
- BRACR13135, Biele Karpaty Mts., Chochná-Velčice village, Kykula settlement, alt.: 750 m, in pasture, leg.: E. Pisarčíková, 26.10.2008;
- BRACR 16728, Turzovská vrchovina Mts., Korňa village, Žilovci settlement, alt.: 565 m, CHKO Kysuce, in mowed meadow, leg.: L. Mikovčáková, 27.10.2008;
- BRACR12843, Malé Karpaty Mts., Borinka village, Lintavy, Košariská, alt.: 300 m, in meadow, leg.: R. Bednár, 2.11.2008;
- BRACR 16727, Biele Karpaty Mts., Soblahov village, Ostrý vrch hill, alt.: 540m in meadow, leg.: K. Devánová, 13.10.2009;
- BRACR15889, Javorníky Mts., Púchov, Lachovec hill, alt.: 300 m, in mixed forest former pasture, leg.: I. Kautmanová, 12.6.2010;
- BRACR14534, Javorníky Mts., Púchov town, Lachovec hill, alt.: 250 m, in mixed deciduous forest (former meadow), *Acer*, *Tillia*, *Crataegus*, *Ulmus*, *Corylus*, *Malus* etc., leg.: V. Kautman, 15.6.2010;
- BRACR16079, Podtatranská kotlina Basin, Hybe village, alt.: 800 m, in mowed and grazed grass in old orchard near the village, leg.: I. Kautmanová, 2.9.2010;
- BRACR15887, Nízke Tatry Mts., Malužiná village, Michalovo valley, alt.: 760 m, in pasture, limestones, leg.: V. Kučera, 2.9.2010;
- BRACR 16730, Malé Karpaty Mts., Chtelnica, Plešivá hora, alt.: 350 m, CHKO Malé Karpaty, in pasture, leg.: J. Komár, 2.9.2010;
- BRACR16721, Považský Inovec Mts., Piešťany town, Banka village, alt.: 250 m, in grazed meadow, in shrubs, leg.: L. Tábi, 3.9.2010;
- BRACR15101, Malé Karpaty Mts., Chtelnica, Plešivá hora, alt.: 350 m, leg.: I. Kautmanová, V. Kautman, 12.9.2010;
- BRACR15067, Malé Karpaty Mts., Pezinok, Stará hora, alt.: 230 m, grassy place between old vineyards, leg.: V. Kautman, J. Kuriplach, 16.9.2010;
- BRACR16562, Biele Karpaty Mts., Nová Bošáca village, Španie settlement, Prírodná pamiatka Blažejová, in mowed meadow, alt.: 420 m, leg.: V. Kautman, 17.9.2010;
- BRACR16600, Biele Karpaty Mts., Nová Bošáca village, PP Blažejová, alt.: 410 m, leg.: N. Rybáriková, 17.9.2010;

- BRACR16045, Javorníky Mts., Púchov town, Lachovec hill, alt.: 280 m, in old pasture outgrown by mixed forest, leg.: V. Kautman, 18.9.2010;
- BRACR15055, Malé Karpaty Mts., Chtelnica, Plešivá hora, alt.: 330 m, in old pasture, leg.: V. Kautman, V. Kučera, 29.9.2010;
- BRACR15061, Považský Inovec Mts., Piešťany, Banka village, Vápenišťia, alt.: 250 m, in pasture and shrubs, leg.: V. Kautman, V. Kučera, 29.9.2010;
- BRACR15068, Považský Inovec Mts., Piešťany, Banka village, Vápenišťia, alt.: 250 m, in pasture and shrubs, leg.: I. Kautmanová, 29.9.2010;
- BRACR15076, Považský Inovec Mts., Piešťany, Banka village, Vápenišťia, alt.: 250 m, in pasture and shrubs, leg.: V. Kautman, V. Kučera, 29.9.2010;
- BRACR15038, Biele Karpaty Mts., Chochoľná-Velčice village, Kykula settlement, alt.: 850 m, in grazed meadow, leg.: I. Kautmanová, 25.10.2010;
- BRACR16084, Biele Karpaty Mts., Chochoľná-Velčice village, Kykula settlement, alt.: 800 m, in mowed and grazed meadow, leg.: V. Kautman, 25.9.2010;
- BRACR16046, Malé Karpaty Mts., Chtelnica, Plešivá hora hill, alt.: 320 m, in grass and shrubs, leg.: V. Kautman, 4.10.2010;
- BRACR15145, Starohorské vrchy Mts., Banská Bystrica, Jakub village, alt.: 450 m, in meadow, leg.: M. Zajac, 6.10.2010;
- BRACR 16726, Nízke Tatry Mts., Banská Bystrica, Jakub village, alt.: 450 m, in soil under *Corylus* and *Tilia*, leg.: M. Zajac, 6.10.2010;
- BRACR15915, Malé Karpaty Mts., Horné Orešany village, Všivavec, alt.: 350 m, in dry steppe, leg.: B. Kuzmová, J. Kuriplach, 14.11.2010;
- BRACR16644, Považský Inovec Mts., Piešťany, Banka village, alt.: 250 m, in grass and shrubs at ski lift, leg.: I. Kautmanová, 13.8.2011;
- BRACR16637, Považský Inovec Mts., Piešťany, Banka village, alt.: 250 m, in grass and shrubs at ski lift, leg.: I. Kautmanová, 13.8. 2011;
- BRACR16661, Považský Inovec Mts., Piešťany, Banka village, alt.: 250 m, in grass and shrubs near ski lift, leg.: V. Kautman, 18.8.2011;
- BRACR16665, Považský Inovec Mts., Piešťany, Banka village, alt.: 250 m, in grass and shrubs near ski lift, leg.: V. Kautman, 18.8.2011;
- BRACR16664, Považský Inovec Mts., Piešťany, Banka village, alt.: 250 m, in grass and shrubs near ski lift, leg.: V. Kautman, 18.8.2011.

### *Clavaria pullei* Donk

**Description** – **Basidiomata** simple, solitary or in small clusters of 2–3, cylindrical, sometimes slightly clavate, subacute or blunt, 20–40 mm high, fertile part 1–3 mm thick. dark brown, rufous, yellowish or blackish brown, tips blackening with age, basal part up to 1–2 mm thick, stem indistinct, short, paler, yellowish brown, base white, finely cottony. Context pale brown to yellowish-brown, elastic, without smell. Reaction to FeCl<sub>3</sub> negative. **Spores** 5.1–5.9 × 3.1–3.7 μm, oblong often ventrally depressed, thin-walled, smooth, hyaline. **Basidia** without clamps.

### **Comments**

*Clavaria pullei* described by Donk (1933) from Netherlands as small, brown and elastic, is recently well recognized and widely accepted species in Europe. However this small brown species is difficult to find. It is probably not only overlooked, but it is rather rare, too. Only a single collection of *C. pullei* is known from Slovakia.

### Foreign specimens

BRACR13265, Norway, Akershus, Nesodden, Røer, alt.: 110 m, in grass in the forest road, leg.: V. Kučera, 9.9.2009;

BRACR13271, Norway, Buskerud, Nedre Eiker lake, Rhygsettra, alt.: 280 m, in mowed meadow, leg.: I. Kautmanová, 11.9.2009.

### Slovak specimens

BRACR13101, Malé Karpaty Mts., Sološnica village, alt.: 320 m, in a meadow near the tourist route, leg.: V. Kučera, 26.8.2008.

### *Clavaria rosea* Dalman

**Description** – **Basidiomata** simple, solitary or in small clusters of 2–3, smooth, cylindrical, slightly subacute at the apex, 20–70 mm high, fertile part 1–3 mm thick, bright pink to rose pink, darkening with drying to pinkish ochraceous, but still retaining pinkish tones. Basal part indistinctive, of the same colour and structure as fertile part, fading towards the base covered with whitish mycelium. Context pink, concolours, fragile, watery, taste and smell indistinctive. Reaction to FeCl<sub>3</sub> greyish. **Spores** 5.0–5.6 × 3.0–3.3 μm, ellipsoid, thin-walled, smooth, hyaline. Basidia without clamps.

### Comments

With the absence of type specimen or suitable illustration, Corner (1950) decided to separate three pink coloured taxa: *C. incarnata*, pale pink, with long spores as described by Bourdot & Galzin (1927), *C. rosea*, dark pink with narrow spores as first thoroughly described by Coker (1923) and *C. rosea* var. *subglobosa* with subglobose spores, not recognized before. Jindřich (2007) published the record of *C. rosea* var. *subglobosa* from Czech Republic. This beautiful, dark-pink *Clavaria* is rather rare but in the last years has been repeatedly collected at several localities in Slovakia.

### Foreign specimens:

BRACR13267, Norway, Steinkjer, alt.: 10 m, in gravel along the path in the city, leg.: I. Rimóczy, 5.9.2009.

### Slovak specimens:

BRACR15913, Podtatranská kotlina Basin, Hybe village, alt.: 800 m, in mowed and grazed grass in old orchard near the village, leg.: H. Kautmanová, 2.9.2010;

BRACR15925, Malé Karpaty Mts., Chtelnica, Plešivá hora hill, alt.: 230 m, in old grass and shrubs, in abandoned pasture, leg.: J. Komár, 5.9.2010;

BRACR15917, Myjavská pahorkatina Upland, Brezová pod Bradlom village, Minárčiny, alt.: 305 m, meadow at the road, leg.: V. Kučera, 6.9.2010;

BRACR15105, Malé Karpaty Mts., Chtelnica, Plešivá hora, alt.: 350 m, in old grass and shrubs, in abandoned pasture, leg.: I. Kautmanová, V. Kautman, 12.9.2010;

BRACR16636, Podtatranská kotlina Basin, Hybe village, alt.: 810 m, in grass and shrubs in old orchard, leg.: I. Kautmanová, 12.8.2011;

BRACR16662, Malé Karpaty Mts., Chtelnica, Plešivá hora, alt.: 350 m, in shrubs, leg.: V. Kautman, 18.8.2011.

## *Clavaria straminea* Cotton

**Description** – **Basidiomata** simple, solitary or gregarious, cylindrical, sometimes narrowly clavate, subacute or blunt, 15–50 mm high, fertile part 1–2 mm thick, pale yellow to yellowish ochraceous, paler when drying, basal part up to 1–2 mm thick, stem distinctive, short, shiny, chrome yellow, with whitish mycelium at the base. Context chrome yellow, elastic, taste mild, without smell. Reaction to FeCl<sub>3</sub> negative. **Spores** 6.0–6.5 × 6.0–7.0 μm, globose, subglobose or broadly ellipsoid, thin-walled, smooth, hyaline. Basidia with loop-like clamps at the base.

### **Comments**

This is one of the most common *Clavaria* species in Slovakia, collected for the first time by Adamčík in 2005 at Kátlina in Javorníky Mts. (specimen SAV F-1998) and in 2007 at Bijacovce in Levočské vrchy Mts. (specimen SAV F-3485).

### **Slovak specimens:**

- BRACR12809, Podtatranská kotlina Basin, Hybe village, alt.: 850 m, in mowed and grazed grass in the old orchard near the village, leg.: I. Kautmanová, 15.8.2008;
- BRACR12807, Stolické vrchy Mts., Muránska Zdychava village, alt.: 600 m, in mowed and grazed meadow above the village, leg.: I. Kautmanová, 9.10.2008;
- BRACR12839, Stolické vrchy Mts., Revúca, Muránska Zdychava village, alt.: 600 m, in mowed and grazed meadow above the village, leg.: V. Kautman, 9.10.2008;
- BRACR12844, Stolické vrchy Mts., Muráň village, Predná hora recreation area, alt.: 1000 m, in short grass under the ski lift, leg.: V. Kautman, 10.10.2008;
- BRACR12808, Stolické vrchy Mts., Muráň village, Predná hora recreation area, alt.: 700 m, in grazed meadow under the ski lift, leg.: I. Kautmanová, 10.10.2008;
- BRACR12770, Biele Karpaty Mts., Chochoľná-Velčice village, Kykula settlement, alt.: 710 m, in mowed and grazed meadow, leg.: I. Kautmanová, 12.10.2008;
- BRACR12848, Biele Karpaty Mts., Chochoľná-Velčice village, Kykula settlement, alt.: 850 m, in pasture, leg.: E. Pisarčíková, 12.10.2008;
- BRACR12846, Považský Inovec Mts., Piešťany, Banka village, alt.: 250 m, in grass, leg.: I. Kautmanová, 25.10.2008;
- BRACR12849, Považský Inovec Mts., Piešťany, Banka village, alt.: 250 m, in grass, leg.: V. Kautman, 25.10.2008;
- BRACR12850, Biele Karpaty Mts., Chochoľná-Velčice, Kykula settlement, alt.: 750 m, in pasture, leg.: E. Pisarčíková, 26.10.2008;
- BRACR13133, Biele Karpaty Mts., Chochoľná-Velčice village, Kykula settlement, alt.: 750 m, in pasture, leg.: E. Pisarčíková, 2.11.2008;
- BRACR16725, Podtatranská kotlina Basin, Hybe village, alt.: 790 m, in mowed and grazed grass in old orchard, leg.: I. Kautmanová, 19.9.2009;
- BRACR16719, Zvolenská kotlina Basin, Zvolen town, Borová hora arboretum, alt.: 315 m, in meadow, leg.: I. Kautmanová, 30.9.2009;
- BRACR16051, Podtatranská kotlina Basin, Hybe village, alt.: 800 m, in mowed and grazed meadow in old orchard near the village, leg.: I. Kautmanová, 21.8.2010;
- BRACR16050, Podtatranská kotlina Basin, Hybe village, alt.: 800 m, in mowed and grazed grass in old orchard near the village, leg.: I. Kautmanová, 21.8.2010;
- BRACR15912, Podtatranská kotlina Basin, Hybe village, alt.: 800 m, in mowed and grazed meadow in old orchard near the village, leg.: I. Kautmanová, 2.9.2010;



- BRACR15096, Malé Karpaty Mts., Chtelnica, Plešivá hora, alt.: 350 m, leg.: I. Kautmanová, V. Kautman, 12.9.2010;
- BRACR15134, Malé Karpaty Mts., Pezinok, Stará hora, alt.: 230 m, in a grassy place between vineyards, leg.: J. Kuriplach, 16.9.2010;
- BRACR15117, Malé Karpaty Mts., Pezinok town, Stará hora, alt.: 230 m, grassy place between old vineyards, leg.: V. Kautman, J. Kuriplach, 16.9.2010;
- BRACR15121, Malé Karpaty Mts., Pezinok, Stará hora, alt.: 230 m, grassy place between old vineyards, leg.: V. Kautman, J. Kuriplach, 16.9.2010;
- BRACR16385, Oravská vrchovina Mts., Dolný Kubín town, Medzihradné hill, alt.: 540 m, in shrubs (*Rosa*, *Crataegus*) at the edge of deciduous forest, leg.: M. Švidroň, 17.9.2010;
- BRACR16082, Nízke Tatry Mts., Malužiná village, Michalovo valley, alt.: 780 m, in mowed and grazed meadow on limestones, leg.: V. Kautman, 18.9.2010;
- BRACR15505, Laborecká vrchovina Upland, Snina town, Stambočská úboč, alt.: 260 m, in soil, (*Alnus*, *Corylus*), leg.: J. Pavlík, 20.9.2010;
- BRACR15063, Malé Karpaty Mts., Chtelnica, Plešivá hora, alt.: 330 m, in old pasture, leg.: V. Kautman, V. Kučera, 29.9.2010;
- BRACR15057, Považský Inovec Mts., Piešťany town, Banka, Vápenišťia, alt.: 250 m, in pasture and shrubs, leg.: V. Kautman, V. Kučera, 29.9.2010;
- BRACR16086, Malé Karpaty Mts., Chtelnica, Plešivá hora hill, alt.: 320 m, in grass and shrubs, leg.: V. Kautman, 4.10.2010;
- BRACR16593, Starohorské vrchy Mts., Kováčová village, chatová osada Borina, alt.: 345 m, leg.: V. Kautman, 13.10.2010;
- BRACR16586, Stolické vrchy Mts., Muránska Zdychava village, Štefková, alt.: 650 m, leg.: V. Kautman, 15.10.2010;
- BRACR16646, Podtatranská kotlina Basin, Hybe village, alt.: 810 m, in grass and shrubs in old orchard, leg.: I. Kautmanová, 12.8.2011;
- BRACR16660, Považský Inovec Mts., Banka village, alt.: 250 m, in grass and shrubs near ski lift, leg.: V. Kautman, 18.8.2011;
- BRACR16707, Stolické vrchy Mts., Muránska Huta village, Predná Hora, alt.: 830 m, leg.: V. Kautman, 4.10.2011.

### *Clavaria tenuipes* Berk. & Broome

**Description** – **Basidiomata** simple, solitary or gregarious, 10–50 mm high, smooth, matt, cylindrical when young, then distinctly clavate, often hollow and compressed when old, rounded at the apex, fertile part 2–5 mm thick, narrowing towards the stipe, dirty white or pale grey (1c), ageing to cream or dirty buff (2ca, 2ec). Basal part abruptly separated and well delimited, 3–10 × 1–1.5 mm, concolours, but darker when dry. Context white, soft, elastic, taste and smell indistinctive. Reaction to FeCl<sub>3</sub> slowly browning. **Spores** 5.0–6.3 × 4.5–5.0 μm, rather variable in size and shape, mostly ellipsoid to oblong, hyaline, thin-walled and smooth or finely granulated. **Basidia** with loop-like clamps at the base.

### **Comments**

Berkeley & Broome (1848) separated *Clavaria tenuipes* from *C. falcata* on the base of grayish colour and distinctly club-shaped fertile part. In Slovakia this species is not uncommon, but probably overlooked and misinterpreted for *C. falcata*.

### Foreign specimens:

- BRACR13596, Norway, Oslo, Dronningsbergeret, alt.: 15 m, in mixed forest in the city park, (*Tillia*, *Corylus*, *Pinus*), leg.: I. Kautmanová, 7.09.2009;  
BRACR16736, Czech Republic, Mělník town, Kokořín village, alt.: 280 m, in bare soil in shrubs, leg. S. Valda, 18.9.2010;  
BRACR16735, Czech Republic, Mělník town, Střemy village, alt.: 280 m, in mosses under shrubs, leg.: S. Valda, 9.9.2010.

### Slovak specimens:

- BRACR9758, Považský Inovec Mts., Piešťany town, Banka village, alt.: 260 m, in grass in old pasture, leg.: V. Kautman, 27.10.2007;  
BRACR13134, Malé Karpaty Mts., Lozorno village, Lintavy, alt.: 350 m, in dry meadow, leg.: R. Bednár, 19.10.2008;  
BRACR16026, Košická kotlina Basin, Lemešany, Čierna hora, alt.: 300 m, leg.: V. Blaško, 27.10.2008;  
BRACR16722, Považský Inovec, Piešťany town, Banka village, alt.: 250 m, in grass and shrubs on grazed meadow, leg.: L. Tábi, 11.9.2010;  
BRACR15091, Malé Karpaty Mts., Chtelnica, Plešivá hora, alt.: 350 m, leg.: I. Kautmanová, V. Kautman, 12.9.2010;  
BRACR15125, Malé Karpaty Mts., Pezinok, Stará hora, alt.: 230 m, grassy place between old vineyards, leg.: V. Kautman, J. Kuriplach, 16.9.2010;  
BRACR15122, Malé Karpaty Mts., Pezinok, Stará hora, alt.: 230 m, grassy place between old vineyards, leg.: V. Kautman, J. Kuriplach, 16.9.2010;  
BRACR15126, Malé Karpaty Mts., Pezinok, Stará hora, alt.: 230 m, grassy place between old vineyards, leg.: V. Kautman, J. Kuriplach, 16.9.2010;  
BRACR15064, Malé Karpaty Mts., Chtelnica, Plešivá hora, alt.: 330 m, in old pasture, leg.: V. Kautman, V. Kučera, 29.9.2010;  
BRACR15120, Malé Karpaty Mts., Chtelnica, Plešivá hora, alt.: 330 m, in old pasture, leg.: V. Kautman, V. Kučera, 29.9.2010;  
BRACR15127, Považský Inovec Mts., Piešťany, Banka, Vápenišťia, alt.: 250 m, in pasture and shrubs, leg.: V. Kautman, V. Kučera, 29.9.2010;  
BRACR15114, Považský Inovec Mts., Piešťany, Banka, Vápenišťia, alt.: 250 m, in pasture and shrubs, leg.: V. Kautman, V. Kučera, 29.9.2010.

### *Clavaria zollingeri* Lévl.

**Description** – **Basidiomata** gregarious, 20–60 × 15–20 mm, irregularly polytochomously (3–4 times) branched, or rarely almost simple, branches parallel or convergent, cylindrical, smooth, matt, apices rounded or subacute, bright violet (10nc, 10pe) or pinkish violet (10ia), ageing to pale ochraceous lilac. Stipe 5–15 × 2–4 mm, concolorous, paler towards the base, yellowish with age, with white mycelium at the base. Context concolorous, extremely fragile, taste and smell indistinctive or mild farinaceous. Reaction to FeCl<sub>3</sub> negative. **Spores** 5.5–5.9 × 4.0–5.3 μm, ellipsoid to broadly ellipsoid or subglobose, hyaline, thin-walled and smooth.

**Basidia** without clamps.

### Comments

This brightly coloured violet species is the only one *Clavaria* with branched basidiomata, easily recognized among other related species. However this conspicuous species has not been known from Slovakia since 2010 when it was collected in Nízke Tatry Mts. and Turzovská

vrchovina Mts. This species is rare in whole Europe and besides Scandinavia and Great Britain, where it is probably more common, it has been recently reported only from France, Switzerland, Spain and Czech Republic, where it was collected in 2007 (Jindřich et al., 2008).

#### **Foreign specimens:**

BRACR4318, Finland, Juupajoki, alt.: 160 m, Etelä-Häme Prov, Hyytiälä Forest Field Station surroundings, grid, leg.: I. Kautmanová, 6.9.2005;

BRACR13372, Norway, Steinkjer, Mokka, alt.: 350 m, in grassland, leg.: M. Jeppson, E. Larsson, 3.9.2009;

BRACR13263, Norway, Akershus, Nesodden, Røer, alt.: 110 m, in mixed deciduous forest, leg.: V. Kautman, 9.9.2009.

#### **Slovak specimens:**

BRACR15965, Nízke Tatry Mts., Malužiná village, Michalovo valley, Gašperík settlement, alt.: 760 m, in mowed and grazed meadow on limestones, leg.: V. Kautman, 1.9.2010;

BRACR15923, Nízke Tatry Mts., Malužiná village, Michalovo valley, Gašperík settlement, alt.: 760 m, in pasture, limestone, leg.: I. Kautmanová, 1.9.2010;

BRACR15130, Turzovská vrchovina Mts., Korňa village, Žilovci settlement, alt.: 650 m, na lúke, leg.: L. Mikovčáková, 15.9.2010;

BRACR16040, Nízke Tatry Mts., Malužiná village, Michalovo valley, alt.: 780 m, in mowed and grazed meadow on limestones, leg.: I. Kautmanová, 18.9.2010;

BRACR15909, Turzovská vrchovina Mts., Korňa village, Žilovci settlement, alt.: 650 m, in shrubs (*Corylus avellana*) on old abandoned pasture, leg.: L. Mikovčáková, 19.9.2010.

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