GENUS SKELETOCUTIS (POLYPORACEAE) IN THE UKRAINIAN LEFT BANK FOREST STEPPE

Upon review of the reference data and the author's herbarium specimens were recorded five species of the Skeletocutis genus in the Ukrainian Left Bank Forest Steppe. One species, S. brevispora, is a new record for Ukraine, another one, S. carneogrisea, was found for the first time in the Ukrainian Left Bank Forest Steppe. For other two species, S. nivea, S. subincarnata, new localities were found within the studied region.

Key words: genus, Skeletocutis brevispora, distribution, Ichnia National Natural Park, Ukraine.

Introduction. Skeletocutis Kotl. et Pouzar is a genus of aphyyllophoroid fungi with poroid hymenophore belonging to Polyporaceae Fr. ex Corda family. The genus was described in 1958 by Czech mycologists using the type species Skeletocutis amorphora (Fr.) Kotl. & Pouzar [15]. In 1982 A. David referred several species to this genus (S. azorica (D.A. Reid) Júlich, S. jelicii Tortić & A. David, S. portrosensis A. David and S. subsphaerospora A. David) with incrusted generative hyphae and monomitic hyphal system [12]. However, reference of such species to Skeletocutis genus has been deemed arguable. Thus, L. Ryyarden, R. Gilbertson [20] and A. Bernicchia [7] treated the species with monomitic hyphal system as a part of Canシoriopsis Domani GRAT genus and delimited Skeletocutis based on its dimitic system and encrustation of the hyphae at dissepiment edges.

The molecular and phylogenetic studies completed in the early XXI century demonstrated that the hyphal system's type is not a diagnostic feature for Skeletocutis genus [18, 23]. Relying on the foregoing data it was found out that the genus also comprises the species with monomitic hyphal system [18, 23]. Two species, Skeletocutis lenis (P. Karst.) Niemelä and S. vulgaris (Fr.) Niemelä & Y.C. Dai, were transferred to a new genus Sidera Miettinen & K.H. Larss. (Hymenochaetales Oberw.) based on ITS (internal transcribed spacer) and LSU (large subunit) nuclear ribosomal DNA (nrDNA) sequence analyses [18]. The main morphological difference between the two genera is that Skeletocutis usually has hyphae encrusted by fine crystals on the tube mouths, whereas in Sidera the dissepiment edge hyphae are smooth or covered with a few faceted crystal clusters [18, 19].

Genus Skeletocutis comprises the species with annual and perennial basidiocarps. Basidiocarps resupinate or pileate; normally white or occasionally grey, pink or purple colored [21]. The most of this species have a dense cartilaginous zone above the tube layer [21]. According to the contemporary concept, the genus comprises the species with monomitic, dimitic and trimitic hyphal system [18, 23]. This genus's inherent feature is generative hyphae encrustation at dissepiment edges by crystals resembling rose thorns. The generative hyphae with clamp, the skeletal hyphae hyaline, thin to slightly thick-walled, occasionally branched. Cystidia absent, however, conical or fusoid cystidioles are observed in most of the species. Basidia four-spored, short clavate or barrel-shaped. Spores hyaline, cylindrical or ellipsoid, in most species they are somewhat curved [20, 22, 25]. Both in Ukraine and globally, most of Skeletocutis species are saprotrophs on the dead wood of various conifers and broadleaved trees. Such species cause white rot. Some of them are able to develop on basidiocarps of the other poly pores [21, 22].

According to the data base Index Fungorum (request, dated April 24, 2017), Skeletocutis genus comprises 43 species. Fungi of this genus are widely distributed in the Northern Hemisphere. Twenty of them are known in Europe [7, 21] and only six species have been recorded in Ukraine [2-6]. According to the reference data, prior to our research there had been three species known for the Left Bank Forest Steppe: Skeletocutis nivea (Jungh.) Jean Keller. S. odora (Peck ex Saccardo) Ginn, S. subincarnata (Peck) Jean Keller. All of them were found in Kharkiv Oblast [4-6].

Materials and Methods

Among materials applied for this article there were species of aphyyllophoroid fungi collected in June-October, 2016 at the forestlands of Ichnia National Natural Park (Ichnia Rayon, Chemihiv Oblast). The Natural Park's area in terms of mycorrhizal zoning of Ukraine belongs to the Left Bank Forest Steppe [1].

The micromorphological structures of the specimens were examined in a 5% aqueous potassium hydroxide solution and Melzer's reagent. The nomenclature of the species follows the “MycoBank” database [http://www.mycobank.org/quicksearch.aspx].

Results and Discussion

Upon review of the herbarium specimens collected over the specified area, we have reported 4 species belonging to Skeletocutis genus. Among them, one species (Skeletocutis brevispora Niemelä) is new for Ukraine, another one (Skeletocutis carneogrisea A. David) was found rare for our country and the new one for the Forest Steppe, for two species (Skeletocutis nivea (Jungh.) Jean Keller, Skeletocutis subincarnata (Peck) Jean Keller) the new locations were found in the Left Bank Forest Steppe. Generally, according to the reference data and the author's own gatherings, as of the date, five species of fungi belonging to this genus have been known for the Left Bank Forest Steppe. The comparative features of these species are shown in table 1.

Table 1. Comparative Features of Skeletocutis known for Ukrainian Left Bank Forest Steppe

| Species                  | Spores dimensions, μm | Number of pores per 1 mm | Substrate                                                                 |
|--------------------------|-----------------------|--------------------------|---------------------------------------------------------------------------|
| Skeletocutis brevispora  | 3.1(3.4-4), 1.1(1.2-1.6) | 6-8(9)                  | On basidiocarps only Phellinidium ferrugineofuscum (P. Karst.) Flasson & Niemelä. |
| Skeletocutis carneogrisea| 2.7(3), 1-3.6(4.2)     | 4-6                     | On basidiocarps and wood of conifer species affected by Trichaptum sp.    |
| Skeletocutis nivea       | 2.8-3.3(3.7)          | 8-10                    | On dead wood of broadleaved trees.                                        |
| Skeletocutis odora       | 3(4), 0.6-0.8         | 4-6                     | Most often on Picea abies (L.) H. Karst. and Populus tremula L.           |
| Skeletocutis subincarnata| 3(2), 5-5.5(1,1)      | 5-7                     | On dead wood of conifers (more rarely on broadleaved trees).              |
Find below the generalizing list of Skeletocutis species for the Left Bank Forest Steppe. For S. brevispora, listed for Ukraine’s territory for the first time, we have submitted description of the macro- and micromorphological structures of the examined sample and the general global distribution. For the rest of the species collected by the author, we have provided details of the collecting date and localities, substrate specialization and distribution in Ukraine.

Basidiomycota

Agaricomycotina

Agaricomycetes

Polyporales

Skeletocutis brevispora Niemelä. *Acta bot. fenn.* 161: 10 (1998)

Basidiocarps annual, resupinate, 1–2 mm thick, waxy when fresh and firm-ceraceous after drying. Pore surface at first white, later straw- to lemon-yellowish, pores angular at first 6–9 per mm. Margin initially pruinose-byssoid, white, when fresh and firm-ceraceous after drying. Pore surface substrate specialization and distribution in Ukraine.

Specimens examined: Ichnia National Natural Park, Ichnia, Ichnia Rayon, Chernihiv Oblast, Ukraine, southwestern outskirts of Ichnia, pine forest, over the dead last year basidiocarp of *Phellinidium ferrugineofuscum* (P. Karst.) Fiasson & Niemelä. T. Niemelä in the species description specifies that it develops on such substrate so often that such feature may be applied for the species identification [19]. According to L. Ryvarden and I. Melo, *S. brevispora* is able to develop on the wood of conifer species affected by *Ph. ferrugineofuscum* [21].

*S. brevispora* is deemed a rare species, however, locally it may be found rather often [19, 22]. Globally, it is known in certain countries of Europe (Norway, Sweden, Finland [21], Poland [14], in the European part of Russia [16, 22] and in China [11].

It is new for Ukraine.

Skeletocutis carneogrisea A. David, Naturaliste Can. 109(2): 245 (1982)

Specimens examined: Ichnia National Natural Park, Ichnia, Ichnia Rayon, Chernihiv Oblast, Ukraine, Budy village, standing pine forest, over basidiocarps of *Trichaptum fuscoideum* (Ehrenb.) Ryvarden on the wood of the fallen trunk *Pinus sylvestris* L., July 17, 2016, August 06, 2016, September 15, 2016.

Ecological peculiarities: Inherent to the wood of conifer species affected by *Trichaptum* Murrill genus’s fungi. According to the reference data and the author’s observations it is able to develop both on the wood affected by *Trichaptum* and the basidiocarps of these polypores.

Distribution in Ukraine: The Left Bank Gramineous-Meadow Steppe [2, 3]. It was found for the first time in Ukrainian Left Bank Forest Steppe and the Forest-Steppe Zone in general.

Skeletocutis nivea (Jungh.) Jean Keller, Persoonia 10(3): 353 (1979)

Specimens examined: Ichnia National Natural Park, Ichnia, Ichnia Rayon, Chernihiv Oblast, Ukraine, southern outskirts of Ichnia, mixed forest, June 24, 2016, September 16, 2016, Avhustivka village, alder forest, on the fallen branches of *Acer platanoides* L., *Alnus glutinosa* (L.) Gaertn., *Robinia pseudoacacia* L., July 16, 2016, August 06, 2016, September 16, 2016.

Ecological peculiarities: It develops on the dead wood of broadleaved trees.

Distribution in Ukraine: The Left Bank Polissia, Transcarpathia, Carpathian Mountains, the Right Bank and the Left Bank Forest Steppe, the Left Bank Gramineous and Meadow Steppe, Crimea [6].

Skeletocutis odora (Peck ex Saccardo) Ginn, *Mycotaxon* 21: 332 (1984)

We failed to support this finding with own gatherings. We explain it by the fact that this species is rare both in Ukraine and in the world. It is confirmed by the fact that it is Red Listed in many European Countries (Estonia [13], Poland [9], Slovakia and Czech Republic [8]) and is a candidate to the list of species protected by Bern Convention [10].

Ecological peculiarities: It develops on dead hardwoods and conifers (most often on *Picea abies* (L.) H. Karst. and *Populus tremula* L.)

Distribution in Ukraine: Transcarpathia, Carpathian Mountains [6], the Left Bank Forest Steppe [5].

Skeletocutis subincarnata (Peck) Jean Keller, Persoonia 10(3): 535 (1979)

Specimens examined: Ichnia National Natural Park, Ichnia, Ichnia Rayon, Chernihiv Oblast, Ukraine, southern outskirts of Ichnia, mixed forest, on the fallen branches of *Acer platanoides* L., June 25, 2016.

Ecological peculiarities: It develops on conifers (more rarely on hardwoods).

Distribution in Ukraine: Transcarpathia, Carpathian Mountains, the Right Bank and the Left Bank Forest Steppe, the Left Bank Gramineous-Meadow Steppe [6].

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ГРИБИ РОДУ SKELETOCUTIS (POLYPORACEAE) ЛІВОБЕРЕЖНОЇ ЛЕСОСТЕПІ УКРАЇНИ

Гриби роду Skeletocutis (Polyporaceae) вперше описані до заводу п н і с н е н н я в Японії, де з'явилися перші звіс з відомих місць росту. На території Лівобережної Лесостепі України відомі нові види грибів із роду Skeletocutis. Один вид – Skeletocutis brevispora – є новим для України, ще один – Skeletocutis carneogrisea – вперше виявлен для в Лівобережній Лесостепі. Для нових видів – Skeletocutis nives, Skeletocutis subincarnata – виявлено нові місцезнаходження в пределах регіону. Ключові слова: рід, Skeletocutis brevispora, поширення, іншою нанціональний природний парк, Україна.

Гриби роду Skeletocutis (Polyporaceae) відомі як міцеліальні гриби, що розвиваються в коре дерев. Вони характеризуються гладенькими, чорними шляхами, що вкривають кору дерев. В Україні відомі два види грибів з роду Skeletocutis: Skeletocutis brevispora і Skeletocutis carneogrisea. Ключові слова: род, Skeletocutis brevispora, поширення, іншою нанціональний природний парк, Україна.