

# THE RATIO OF EPIPHYTIC ASCOMYCETES AND BASIDIOMYCETES YEASTS IN VARIOUS BIOTOPES

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*In this article the data on revealing of ratio of epiphyte ascomycetes and basidiomycetes yeasts in different biotopes are cited. It is established, that the prominent features of phyllosphere of the plants, growing in any biotope, prevail at representatives of basidiomycetes affinitet. Nevertheless, the average-annual share of basidiomycetes kinds has appeared to be various in different biotopes.*

Multiple analyses of quantity and diversity of yeasts allowed us to reveal out some specific features of the relation of an ascomycetes and basidiomycetes kinds in phyllosphere of various types of phytocenosis (1,2).

The specific peculiarity of phyllosphere of the plants, growing in any biotopes is always a great share of yeasts of basidiomycetes affinitet. Nevertheless, the average-annual share of basidiomycetes kinds has appeared to be essentially various in different biotopes (Fig.1). The highest share of basidiomycetes yeasts was in characteristic plants of a forest. Here the average number of ascomycetes consists of more than 100% from the total number of epiphytic yeasts. Considerably highest share of ascomycetes (about 28%) was in phyllosphere of a meadow. Obviously the relative abundance of ascomycetes on the leaves of meadow grasses increases due to the conjugate substrata (first of all due to entomophilic flowers). In general the wind pollinated plants are prevailed in the forest. The yeast communities of these plants differ from the community of phyllosphere, so the basidiomycetes yeasts are always predominated in the forest. The share of ascomycetes kinds of the yeast fungus on marsh plants appeared to be highest and almost made half from the general abundance of yeast fungus. Probably, it is connected with some microclimatic features of this biotype and with greater resistance of basidiomycetes kinds and with the conditions of low humidity.

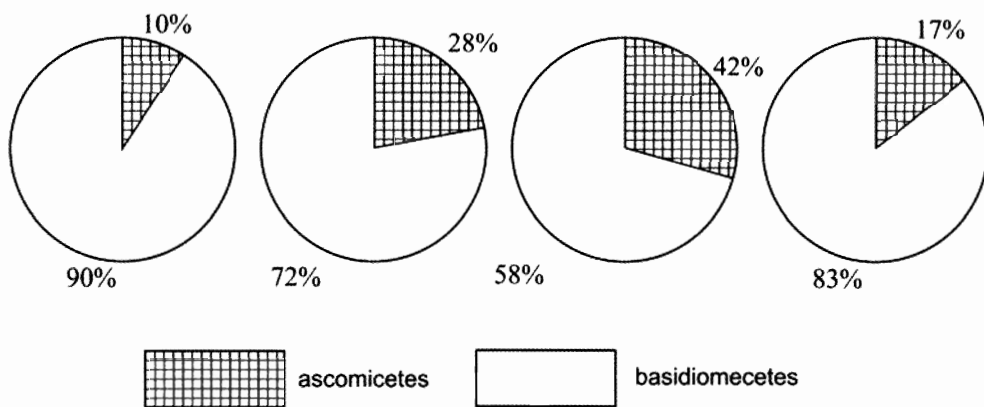
However on a bog we could analyze the least quantity of kinds of plants (only two), the probability of casual overestimate of a relative abundance of ascomycetes yeast therefore are rather high (5, 6).

On the plants in a city stripe the share of basidiomycetes makes 83%. If consider that the aggregate number of yeasts, in the whole, on plants of antropogenous habitats was the lowest, and the share of epiphytic ascomycetes yeasts in general are always below than the basidiomycetes yeasts, then it is no wonder, that in conditions of anthropogenic load of ascomycetes kinds could make only 17%, whereas we as well analyzed the leaves of entomophilous

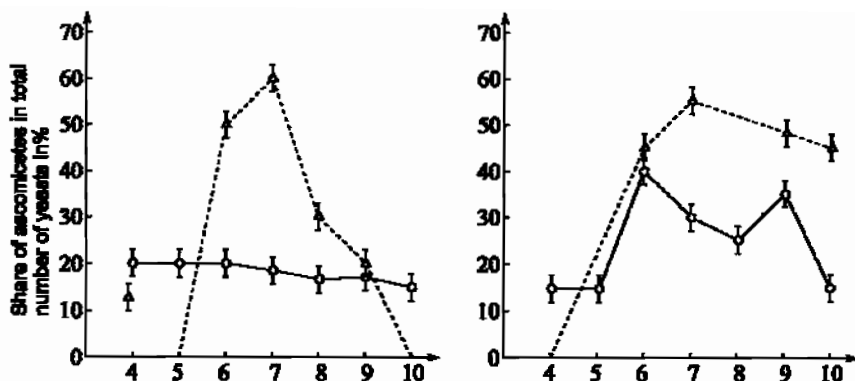
grasses. Besides that the city vegetation is the most rarefied, which seriously reduces mutual insemination by yeast cells and due to it there increases general share of different kinds (9, 10).

As it was already mentioned before that the mass development of ascomycetes yeasts in phyllosphere is mainly connected with a phase of flowering of entomophilous plants. Here essential distinctions between the forest and meadow biogeocenoses can be seen as well (Fig.2). In a forest the share of ascomycetes kinds of yeasts on leaves and flowers is strongly differed. If on leaves its average number never exceeds 20%, then in plants in the time of flowering it quickly reaches almost 60%.

In autumn when the time of active mass flowering passes away it sharply falls almost up to zero. On meadow grasses the share of ascomycetes also rises in flowers during their mass flowering, but kept at a high level (in the order of 40-50%) up to the end of the vegetative period. It is obvious that it is possibly connected with greater differences between the time of flowering among meadow plants and accordingly more long preservation of a substratum (flowers nectar), necessary for the maintenance of high number of kopiotrophe ascomycetes kinds. Unlike the phyllosphere of forest plants where the share of ascomycetes kinds approximately never change during their vegetation, on the leaves of meadow grasses we observe some significant differences in a relative abundance of ascomycetes yeasts (from 10% up to 40% for a vegetative season). Thus the splashes in the abundance of ascomycetes fall to the period of their mass flowering of dominating kinds of plants. And so the increase in share of ascomycetes kinds of yeasts in phyllosphere meadow plants is connected, first of all, with its increase in nectarproducing flowers.



**Fig. 1.** The ratio of a number of ascomycetes and basidiomycetes yeasts in phyllosphere of various biogeocenoses (on the average for a year and on all plants)



**Fig. 2.** The changes of a relative abundance of ascomycetes yeasts during the vegetative period in forest and meadow biogeocenoses  
The ratio of ascomycetes kinds of yeast mushrooms  
on wind pollinating and entomophilous plants

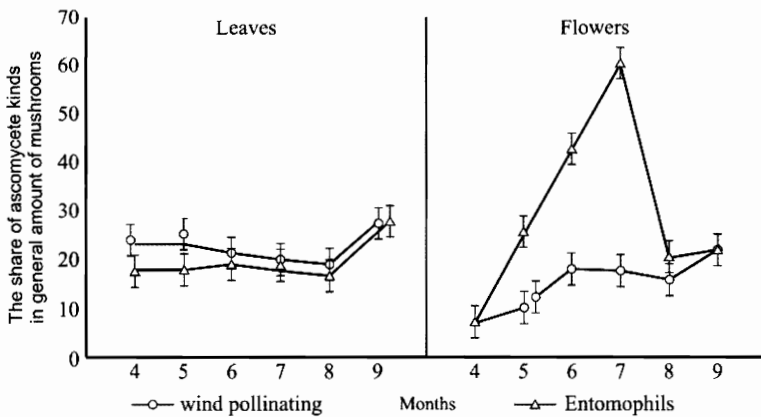
The ties of ascomycetes yeasts with some flower nectars mostly appear when relatively comparing the abundance of epiphyte ascomycete and the basidiomycete kinds on entomophilous and the wind pollinating plants (Fig.3). On the leaves of plants of both groups the ratio of ascomycetes kinds of yeasts could be approximately met the same on the average not more than 25 percent. In the time of their vegetation it can practically never change, but only to the autumn to some extent could grow up to 30 percent. In flowers of entomophilous plants could be met some other conformity to natural laws. The ratio of ascomycetes kinds could considerably grow (up to 60%) in summer months just in the period of mass flowering of plants. In flowers of wind pollinating plants in their generative period could also be met some growth of ascomycetes part but less considerably of course. It is evident that the pollinators could be happened to be more effective of vectors of mutual distribution and spreading of ascomycetes yeasts than the wind, but main parts of growing ascomycetes yeasts, that is, by the nectarbearing pollitionable insects of flowers. The specificity of the dynamics of ascomycetes and the basidiomycetes kinds of yeasts depends on the distribution of arboreous and meadow plants. Learning of all the kinds of yeast mushrooms of phyllosphere in the period of their vegetation of plants showed that, in the character of dynamics the amount of some ascomycetes and basidiomycetes yeasts also have a number of principle differentiations.

The number of basidiomycetes kinds are usually more stable, and in cases of their changing it would be possible to notice some certain seasonal trends of course. And it is so characteristic for the most investigated kinds of autumn plants growing of all epiphyte yeasts on the leaves stipulating mainly gradual increasing of *Cryptococcus albidus* and *Rhodotorula glutinis*. It wit-

nesses that the dynamics of a number of such kinds were mainly conditioned with some seasonal changes of hydrothermal factors of the environment.

The dynamics of the amount of ascomycetes kinds of yeasts, contrarily, in most cases had some explosive character which can never be connected with the changes of weather conditions. Most kinds of ascomycetes yeasts bring in phyllosphere some momentary splashes of their number while the predominating basidiomycetes kinds can be met for a distance of all the ontogenesis of plants. For example, on the leaves of touch-me-not was fixed some short-term dominating of yeasts of *Tarulaspora delbrucku* on fresh leaves in the middle of June, while the other times of ontogenesis, up to a full disappearance of plants in the end of October this kind could have never been discovered. With the similar way behaved themselves some other kinds of ascomycetes yeasts in the phyllosphere.

It was established that such kinds of short-time growth in amount of ascomycetes yeasts and a sharp growth in their ratio in an epiphyte community is connected with their physiological specificities, and as well as with certain specificities of ontogenetic cycles of plants, in particular, with the changes in number and the content of escudates. The majority of kinds chosen by us the ascomycetes yeasts, in the whole are being characterized considerably by a narrow spectrum of consumed substances. And, on the other hand, the majority of chosen by us kinds of ascomycetes yeasts were being assimilating not more than eight sources of carbon out of 40 compounds used for their specific differentiations.



**Fig. 3.** The average relative abundance of pollinating of ascomycetes yeasts during their vegetation period

### Conclusion

1. It is established that the number and a variety of yeasts are some specific features of a ratio of ascomycetes of basidiomycetes kinds in phyllosphere of various types of phytocenosis.

2. It is revealed out that the mass development of ascomycetes yeasts in phyllosphere is mainly connected with the phase of flowering of entomophilous plants.

3. Unlike the phyllosphere of forest plants where the share of ascomycetes does not almost change during the vegetation, on leaves of meadow grasses significant differences could be observed in a relative abundance of ascomycetes yeasts of course.

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## **EPİFİT ASKOMİSET VƏ BAZİDİOMİSET GÖBƏLƏKLƏRİNİN MÜXTƏLİF BİOTOPLARDA YAYILMASI**

**S.İ.ƏLİYEVƏ**

Məqalədə epifit askomiset və bazidiomiset maya göbələklərinin müxtəlif biotoplarda yayılma nisbəti verilmişdir. Müəyyən olunmuşdur ki, hər hansı biotopda yayılmış bitkilərin filloferasının xarakter xüsusiyyəti bazidiomiset affinitet nümayəndələri üstünlük təşkil edir. Buna baxmayaraq bazidiomiset növlərin orta illik payı müxtəlif biotoplarda müxtəlifdir.