



THE INFLUENCE OF ALTITUDE ON YEAST BIODIVERSITY AND CHARACTERIZATION IN ALBANIAN ENDEMIC DECORATIVE PLANTS

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Introduction

Microorganisms development is firmly linked with the changes and transformations of various substances in nature. Microorganisms participate in the breakdown of various organic substances and play an important role in the circulation of nitrogen and carbon in nature. Knowledge of the properties of these microorganisms, conditions of development, activity and biochemical processes they carry out, is essential for achieving the desired results in production. This paper is focused on a comparative study of the same yeast strains offered by same plants, grown in different altitude habitats. It was obvious that the microbial charges of the same plants grown in the habitats of different attitudes were almost the same, but with a different intensity of growth and different morphological characteristics of the same strains. A typical psychrophilic mold/yeast coexistence was observed, characteristic only of psychrophilic species. The most interesting case is the coexistence of *Aureobazidium-Rhodotorula*. An important conclusion of the study was that the development of *Aureobazidium pullulans* in extremely cold conditions is a contribution of the yeast species that accompanies it because it alone cannot adapt to extreme conditions. There were few cultures isolated, purified and passed for identification, which need to be further investigated for a possible relationship to the chemical composition of the plants.

Materials and methods

The experimental work is based on the detailed control of the yeasts isolated from the plants obtained from the expeditions carried out in Dajti Mountain and in the Botanical Garden. The controls carried out on these crops consisted of the continuous observation of their characteristics. After all the plants and samples taken were identified, the experiments were carried out in the Microbiology Lab of the Faculty of Natural Sciences.

Morphological characterization: A pre-weighed and chopped plant sample was placed in an elermeyer with 90 ml of sterilized water and vortex for 20 minutes. They were then left for another 20 minutes to rest. 1 ml of the above prepared sample was poured on pre-heated PDA medium to a temperature of 45oC-46oC. 2 parallel Petri dishes were stored in different conditions, at 30 oC and 4oC, for 48-72 h in order to preserve the cultures and compare the mesophilic and psychrophilic strains, determining the morphological characteristics of each sample.

Physiological characterization: Liquid cultivation method of the samples was used. This method follows after performing the above method of cultivation on PDA medium and is carried out in order to study the physiological characteristics of the yeasts. Microbial material was taken from the culture plate and transferred to a test tube with liquid medium. These test tubes are then stored and observed for 24 hours, 48 hours, 72 hours, 96 hours, 7 days, 14 days and 21 days, in 30 oC and 4oC. During these days, formation of turbidity, color change, formation of precipitate, ring and CO2 formation have been observed.

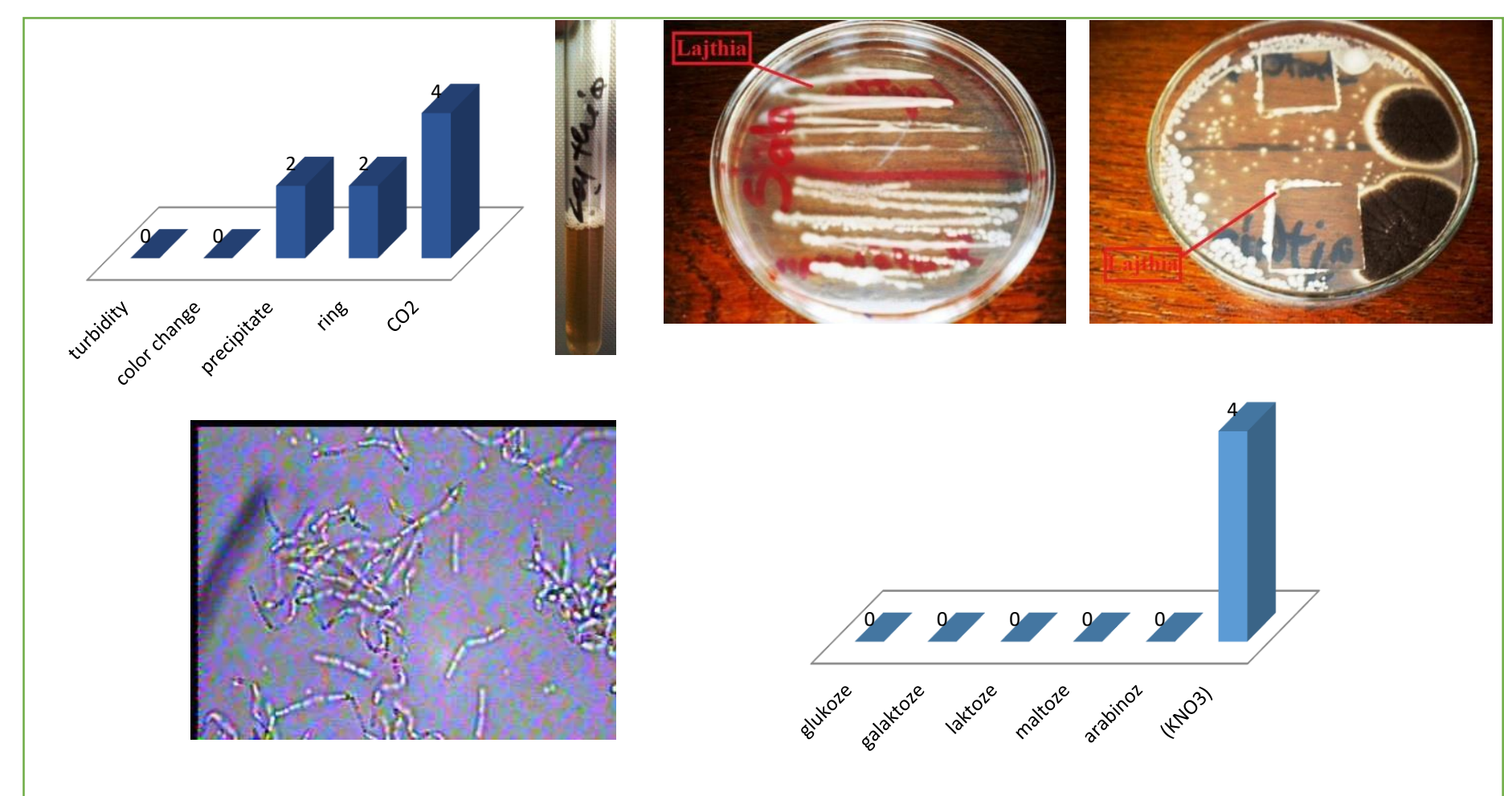
Sugar/ Nitrate assimilation characterization; Auxanographic method: Agar-based medium was used, where 1ml of yeast suspension was previously poured. The two phases were immediately mixed with each other. After the suspension is cooled, glucose, galactose, arabinose, maltose lactose and potassium nitrate, was poured to test sugars and nitrate assimilation. Then the covered Petri dishes are turned upside down and incubated at 30oC. Results should be observed after 1 or 2 days.

Conclusions

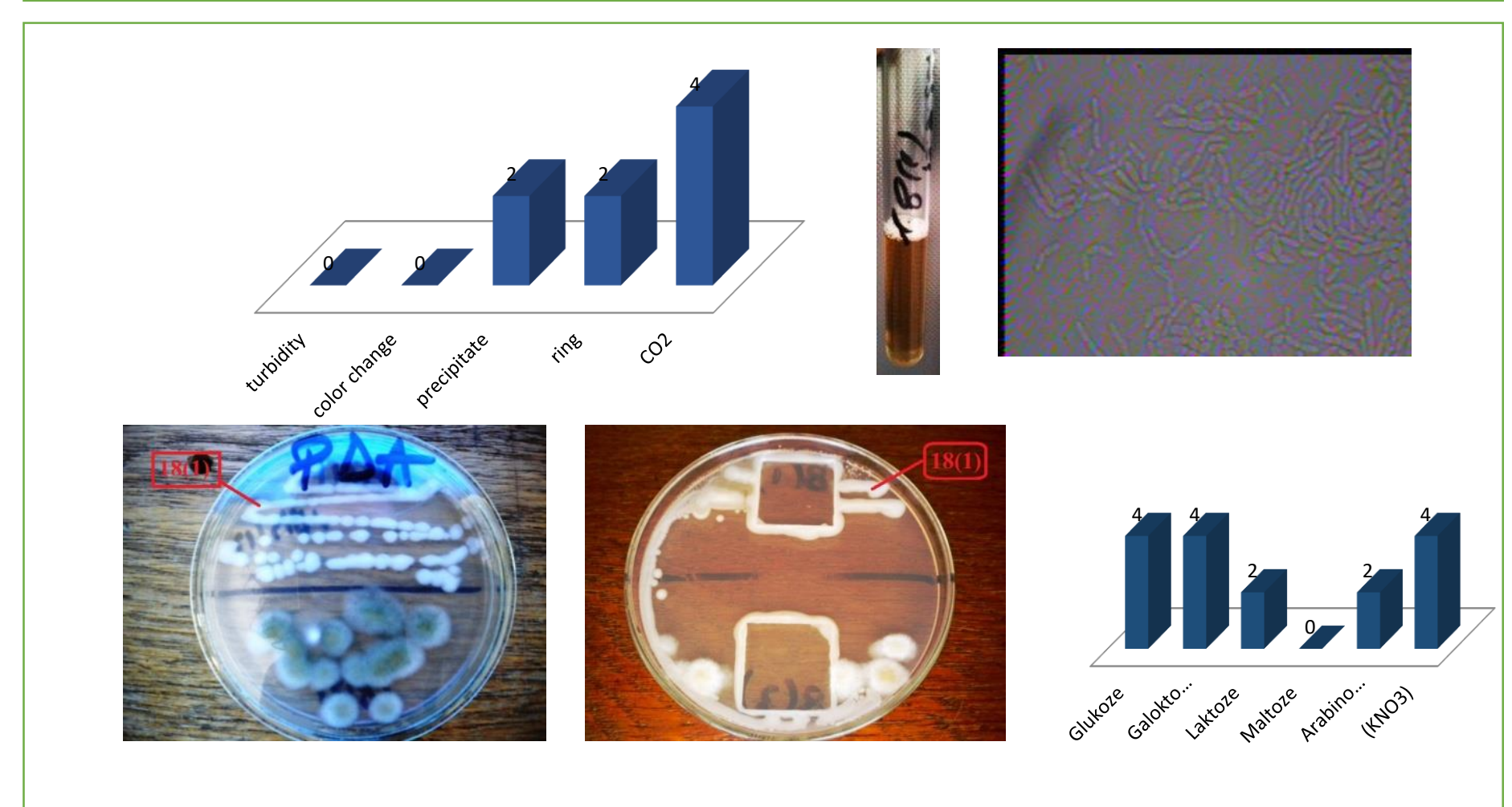
1. This research has included the study of characteristics in selective liquid and solid mediums and has opened a window to continue auxanographic characterization, which was studied only randomly for some species in Albania.
2. Typical psychrophilic mold/yeast coexistences, characteristic only of psychrophilic species, was observed. The most interesting case is the coexistence of *Aureobazidium-Rhodotorula*.
3. The important conclusion was reached that the development of *Aureobazidium pullulans* in extremely cold conditions is the contribution of the yeast species that accompanies it because it alone can not adapt to extreme conditions.
4. The number of cultures isolated, purified and passed for identification depends greatly on the condition of the plants and the water activity they actually provide.
5. From these characteristics we can say that this is a yeast culture but with a fungal contamination. Yeast cells are small but tend to form pseudomycelium (pic.1)
6. From microscopic observation we conclude that this is a yeast culture, with elongated cells and a tendency to pseudomycelium formation (pic.2)
7. From the above characteristics we can say that this is a yeast whose cells are small and elliptical. They are arranged in segmented arrays and tend to be pseudomicelles (pic. 3)
8. From the above characteristics we can say that this is a yeast culture. The yeast of the *Tosulopsis* species is red in color, does not form pseudomycelium and does not have a bud

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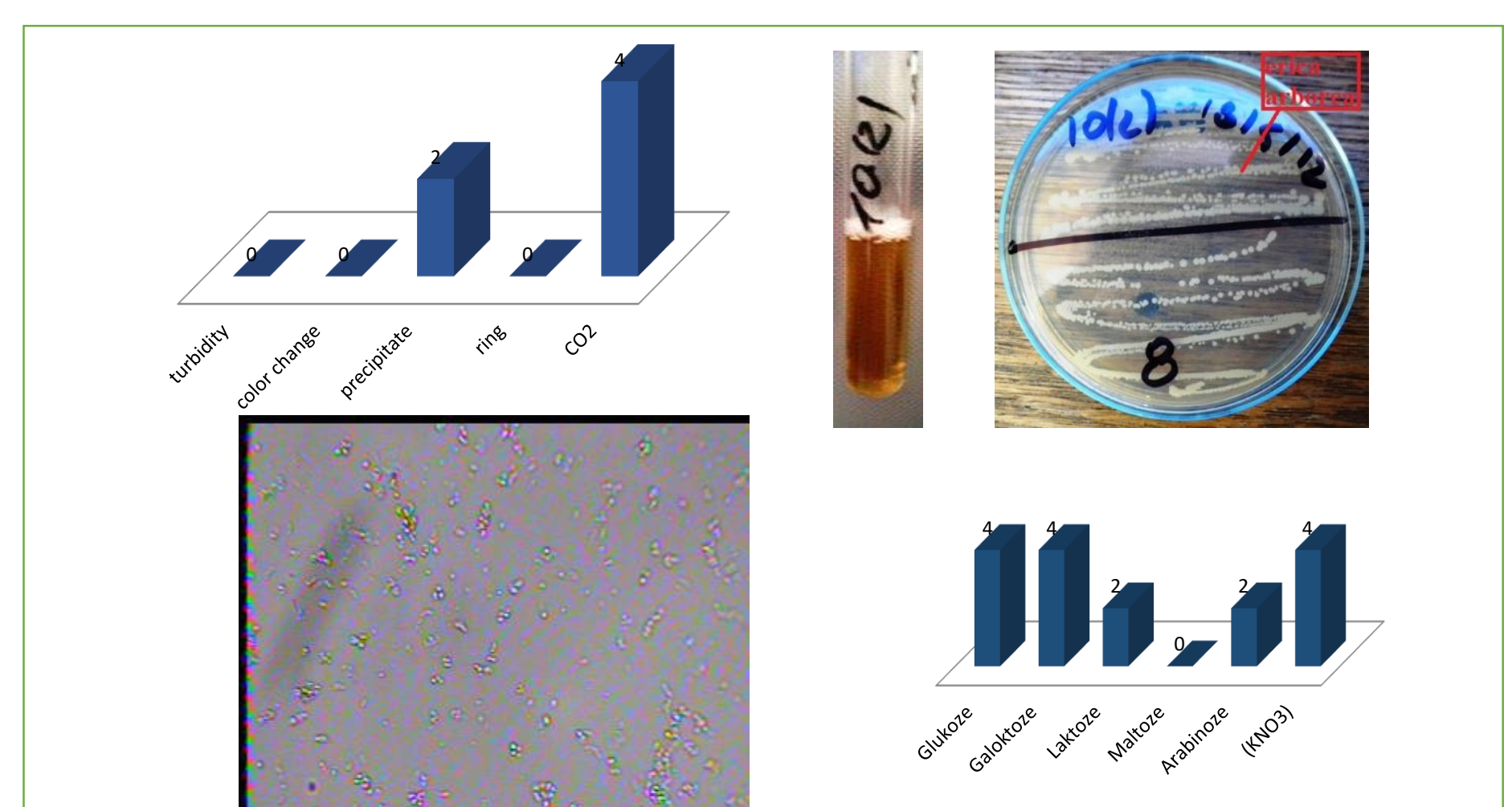
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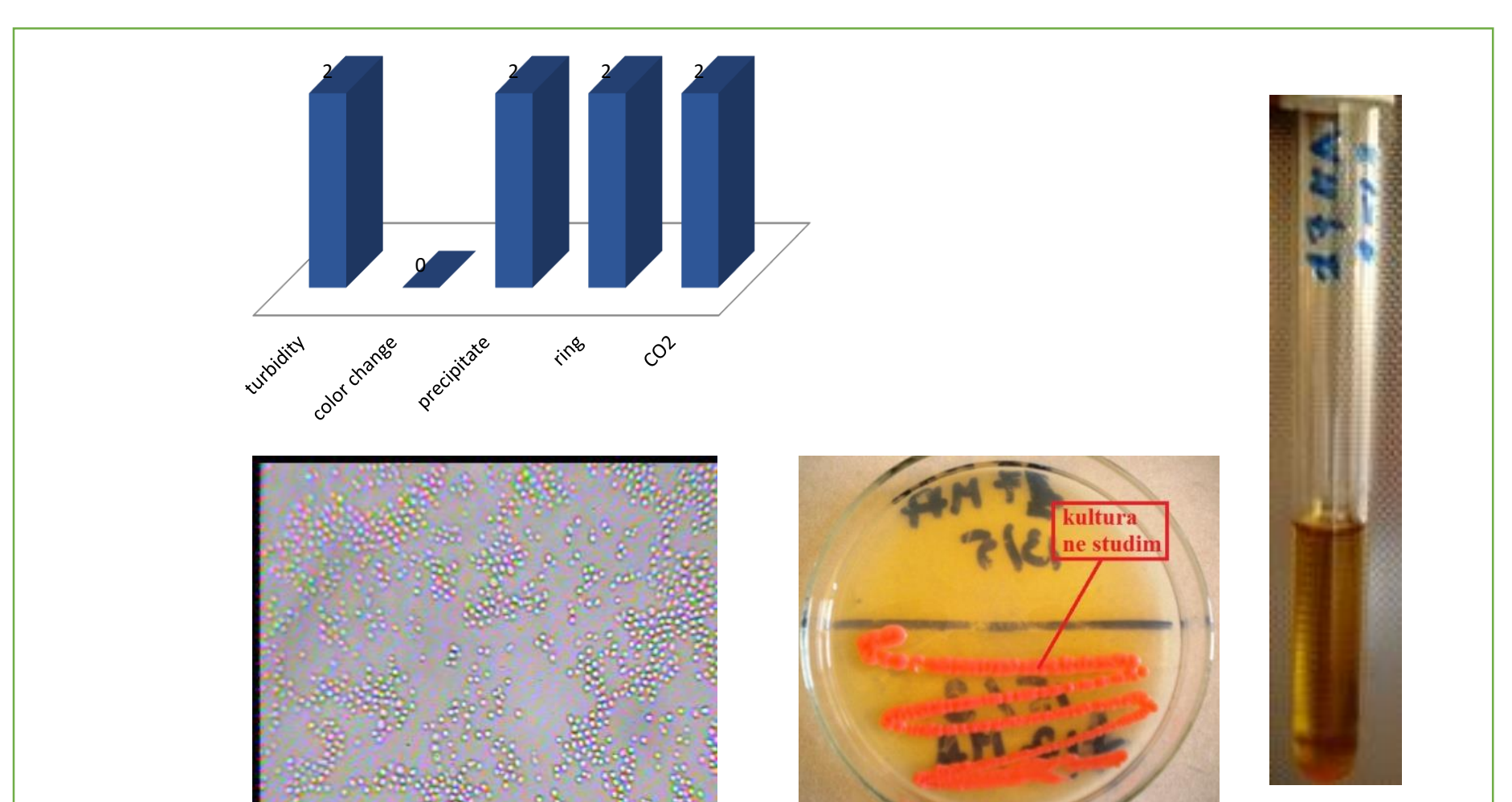
Pic. 1: Corilus ovelina



Pic. 2: Anemone orienis



Pic. 3: Erica arborea



Pic. 4: Leucodon sciuroides