Federal Science Center for Animal Husbandry named after Academy Member L.K. Ernst
founded in 1929
ASAS-CSAS-WSASAS Virtual Annual Meeting & Trade Show
July 19-23, 2020
PSIX-14

INFLUENCE OF LIVING YEAST OF THE GENUS RHODOTORULA AGAINST PROBIOTIC AND PATHOGENIC BACTERIA.

Daria Nikanova*, Evgenia Kolodina

Introduction

Rhodotorula is a common environmental yeast that is found in air, soil, lakes, ocean water, milk, and fruit juice. *Rhodotorula* species, part of the Basidiomycota phylum, colonise plants, humans, and other mammals. Yeast biomass of the genus *Rhodotorula spp*. is a source of microbiological oils, carotenoids, enzymes.

The aim of the research was to study the effect of live yeast *Rhodotorula spp.* on the growth and development of microorganisms and microbial profiles in batch culture.

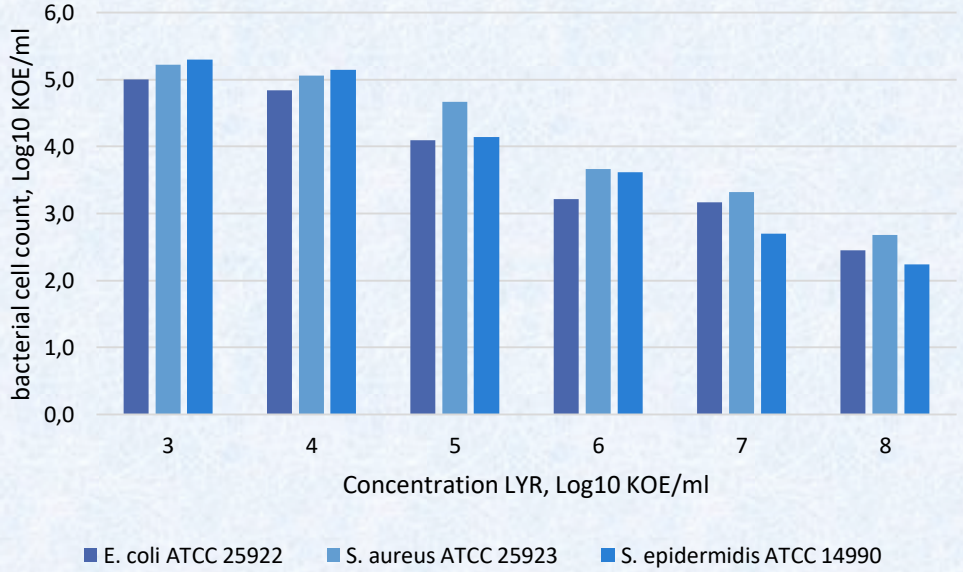
Material and methods

o prepare the inoculum biomass Rhodotorula spp (LYR) was used a liquid medium (20 g/L glucose, 20 g/L peptone, 10 g/L yeast extract). The study in vitro was a 3×5 factorial arrangement, including low (5.0) and high media pH (7.5) and temperature (from 20 to 39 ° C). The treatments were LYR with concentrations from $1 \cdot 10^3$ to $1 \cdot 10^{11}$ CFU/ml. The bacteria were selected: Lactobacillus casei subsp. Rhamnosus ATCC 7469, Bifidobacterium breve ATCC 15701, E. coli ATCC 25922, Staphylococcus aureus ATCC 25923, Staphylococcus epidermidis ATCC 14990. The analyses were carried out separately for each culture and LYR concentration by broth dilution. For incubation were used Saburo agar for LYR and differential-diagnostic media for each bacterial species.

Picture 1. Rhodotorula spp. on solid nutrient medium

Results

After incubation, there was a lack of growth of *E. coli*, *S. aureus* and *S. epidermidis* in LYR concentrations from $1 \cdot 10^9$ to $1 \cdot 10^{11}$ CFU/ml at the temperature of 28±0.5 °C, while the number of yeast cells did not decrease. At the temperature above 32±0.5 °C there was a decrease in the amount of LYR by more than 1000-fold in the samples of all cultures. The presence of LYR in the medium led to an increase in the number of *L. casei* at pH 5.0 and temperature less than 30±0.5 °C. Unlike *L. casei*, the viability of the *B. breve* culture has decreased by 200 times at pH 5.0, but has increased by more than 1000 times at pH 7.0. The optimal cultivation temperature was 36±0.5 °C.



Picture 1. inhibitory effects of Rhodotorula spp (LYR) on the activation and viability of the bacterial cells at 28±0.5°C.

Conclusion: these results indicate the multidirectional effect of *Rhodotorula spp.* on microorganisms in vitro. .

Acknowledgments: this work was supported by the Ministry of Science and Higher Education of Russia (topics GZ AAAA-A18-118021590136-7)

Contacts: Daria Nikanova, e-mail: dap2189@gmail.com
Evgenia Kolodina e-mail: kolodin77@mail.ru