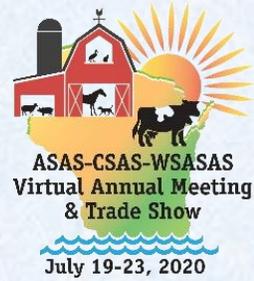




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# INFLUENCE OF LIVING YEAST OF THE GENUS RHODOTORULA AGAINST PROBIOTIC AND PATHOGENIC BACTERIA.

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## 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

To 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 3x5 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.



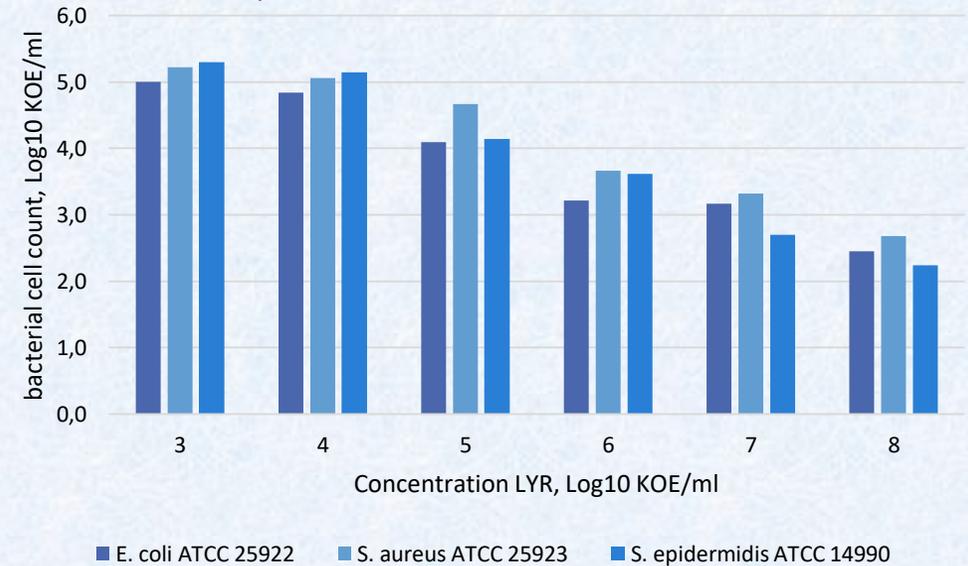
Picture 1. *Rhodotorula* spp. on solid nutrient medium

## 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  $28 \pm 0.5$  °C, while the number of yeast cells did not decrease. At the temperature above  $32 \pm 0.5$  °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  $30 \pm 0.5$  °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  $36 \pm 0.5$  °C.

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

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

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