

TAL 797 – Seminário

17 de junho de 2026

BIOTECHNOLOGICAL EXPLOITATION OF STARMERELLA SPECIES:

PHYSIOLOGY, METABOLISM, AND INDUSTRY

Pós-graduando: Daniela Aparecida Mendonça

Orientador: Monique Renon Eller

Nível: () MS (X) DS

Non-conventional yeasts have attracted growing scientific and industrial interest due to their metabolic diversity and ability to produce high-value compounds using alternative substrates. Among them, the genus *Starmerella* stands out for its association with environments naturally rich in sugars, such as flowers, nectar, and pollinating insects. These ecological niches present challenging conditions, including high osmotic pressure, nutrient scarcity, and intense microbial competition—factors that have driven the selection of key physiological adaptations throughout the evolution of these yeasts. Among the commonly found phenotypes, notable ones include osmotolerance, the capacity to utilize different carbon sources, and the production of metabolites of biotechnological interest, such as biosurfactants, aromatic compounds, lipids, and organic acids. These characteristics are aligned with bioeconomy concepts and suggest potential applications in industrial sectors, including the production of ingredients, foods, beverages, cosmetics, and biomolecules. As an example, *S. bombicola* has been commercially exploited as a microbial platform for biosurfactant production using agroindustrial waste and by-products as alternative carbon sources. Despite the advances observed in recent years, the commercialization of products derived from species of this genus remains limited due to a poor understanding of the physiological mechanisms involved in metabolite production. This leads to inherent difficulties in process optimization and standardization, ultimately resulting in low economic viability for industrial-scale operations. In this scenario, strategies involving the bioprospecting of novel strains, metabolic engineering, and process optimization reinforce the potential of *Starmerella* spp. as a promising microbial platform for applications in foods, beverages, and bioprocesses aligned with the principles of the bioeconomy. This seminar will discuss the main scientific advances in mapping these ecological and physiological adaptations, highlighting how the unique metabolism of *Starmerella* spp. can be exploited to enhance biotechnological processes, contributing to the consolidation of its industrial potential.

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Orientador (a)

Orientado(a)