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Section: 02

EVALUATION OF THE PROBIOTIC POTENTIAL OF MICROORGANISMS ISOLATED FROM COASTAL ECOSYSTEMS OF RIO GRANDE DO SUL, BRAZIL

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Scientific interest in probiotics has increased due to their role in maintaining human health and preventing various diseases. Initially associated only with intestinal balance, their effects are now recognized in metabolic, immunological, and allergic disorders (Yadav et al., 2019). Although *Lactobacillus* and *Bifidobacterium* species are widely used, they exhibit limitations such as low resistance to gastrointestinal conditions, reduced colonization capacity, and variable efficacy. These drawbacks highlight the need for novel and diverse natural probiotic sources, driving the development of next-generation probiotics. Marine ecosystems represent promising alternatives, harboring unique, underexplored microbial diversity and serving as reservoirs of bioactive molecules with biotechnological potential. This study aimed to prospect and characterize environmental microorganisms from marine ecosystems on the coast of Rio Grande do Sul, Brazil, as potential next-generation pre/probiotics. A total of 116 strains were isolated, and 10 candidates (3a, 6a, 12a, 13a, 15a, 24a, 30a, 48a, 51a, 90a) were selected for 16S rRNA sequencing to identify promising marine-derived bacteria. Selection criteria included preliminary tests: growth at 37 °C, anaerobic growth (identifying facultative anaerobes and microaerophiles), absence of virulence factors (gelatinase activity and γ -hemolysis), and antibiotic susceptibility. *Lactobacillus rhamnosus* ATCC 7469 served as a positive control. Six strains (3a, 6a, 12a, 13a, 15a, 30a) outperformed the control in antibiotic resistance profiles. These strains will be further assessed for tolerance to inhibitory substances and subjected to simulated gastrointestinal tract assays. This work was supported by Edital Universal/CNPq under the project “Brazilian biodiversity as a source of biotherapeutic products: a translational approach in the search for next-generation probiotics,” coordinated by REDE MaRe (Rede de Pesquisa dos Ecossistemas Mangue e Restinga) and funded by CNPq/PPBio.

Keywords: Probiotics; Marine bacteria; Restinga ecosystems; Microbial diversity.

