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015- COMPARATIVE STUDY OF CRAFT BEERS MADE DIFFERENT LIQUID FORMULATION OF THE YEAST *Saccharomyces cerevisiae*

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Beer is one of the most consumed alcoholic beverages worldwide. It is a fermented beverage made with natural ingredients such as water, barley, hops, and yeast. Currently, craft brewers are trying to differentiate themselves in the market through innovation, aiming to incorporate liquid yeasts into the brewing process, as these generate a different sensory profile in the final product. The objective of this work was to design two liquid formulations using the yeast *Saccharomyces cerevisiae* to produce craft beer and verify if sensory changes were achieved. The yeasts used were commercial *S. cerevisiae* called Safeale-US-05 and native *S. cerevisiae* isolated from the province of San Luis, called SC-3. Each liquid formulation was designed using beer wort as a culture medium to multiply the yeasts in a bioreactor for 24 hours at 24±2°C, with aeration at 5L/m and agitation speed at 150 rpm. The quality of the formulations was verified under a microscope. To make beer, beer wort was prepared following the recipe for the British Golden Ale style, designed by the Beer Judge Certification Program (BJCP) 2021. The beer wort was placed in two fermenters and inoculated with Formulation 1 (F1-Safeale-US-05) and Formulation 2 (F2-SC-3). After 14 days (7 days of fermentation and 7 days of maturation), the resulting beers were bottled and naturally carbonated. For the sensory study, the beers were evaluated by the brewmaster. The results of the formulation indicated that optimal concentrations for beer production were obtained, F1 ($3.8x10^8$ cel/mL) and F2 ($1.5x10^8$ cel/mL). Both formulations were of high quality, as they showed 100% viability and no contaminants. The sensory test results indicated that the beer produced by F1 had a bright golden yellow appearance, with low turbidity, while the beer produced by F2 had an amber-yellow color, slightly darker. With respect to the aroma, the beer made with F1 did not exhibit a noticeable hop or malt aroma, whereas F2 had a predominant intense hop aroma. Both beers were within the parameters established for the beer style described by the BJCP. In conclusion, we can say that both formulations are optimal for brewing beer and that the differences observed in each beer are due to the fact that each formulation was designed with two different yeast types. F2, designed with native yeast from the province of San Luis, could be promising for transfer to the craft brewing sector.

016 - CHARACTERIZATION AND ENCAPSULATION OF BACTERIAL CONSORTIA, PLANT GROWTH PROMOTERS ISOLATED FROM AROMATIC PLANTS (*Salvia Rosmarinus* and *Origanum vulgare*)

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Sodium alginate, is a natural polymer, widely used method for encapsulating microorganisms, due to its ability to form gels in the presence of calcium ions. This study aimed to analysed, on the one hand, various properties of Plant Growth Promoting Bacteria (PGPB) isolated from rosemary (*Salvia Rosmarinus*) and oregano (*Origanum vulgare*) and on the other, optimize conditions for efficient encapsulation of a consortium formulated from a selection of these isolates. The bacteria were evaluated for their ability to solubilize phosphorus, produce indole-3-acetic acid (IAA) and siderophores, produce acyl-homoserine lactones (AHLs), compete with phytopathogens, and produce extracellular hydrolytic enzymes (pectinases and cellulases). The encapsulation method involved a droplet-based gelation process, where a sodium alginate solution containing the bacteria was extruded into a calcium chloride solution. Various concentrations of sodium alginate (0.037-0.5% w/v) and calcium chloride (2-11.1 g/L), as well as different agitation speeds (1000-2000 rpm), were tested to achieve optimal capsule size and homogeneity. The microcapsules containing the microbial consortium were stored in cryovials with and without water, at 4°C. Cell viability within the capsules was assessed at 15, 30, 60, and 90 days, using serial dilution and plate counting. Results showed that all six isolates could solubilize phosphorus and produce IAA, with isolate 2 being the highest producer (38.2 µg AIA/ml). Only four isolates produced siderophores, and no AHL production was detected. Biocontrol activity against *Fusarium oxysporum* and *Fusarium graminearum* was observed in only one isolate, and pectinase activity was detected in strains 4 and 21, while strain 2 exhibited cellulase activity. The optimal encapsulation conditions involved 0.5% w/v sodium alginate, 7.5 g/L calcium chloride at agitation speed 1000 rpm, resulting in uniform, spherical capsules of approximately 4 mm of diameter. Viability tests demonstrated that the encapsulated bacteria remained viable for up to 90 days, with counts decreasing from 10^8 CFU/ml to 10^6 CFU/ml. These findings support the use of sodium alginate and calcium chloride for encapsulating PGPB isolated from rosemary and oregano, providing new opportunities for sustainable agriculture. This methodology could be a significant advancement in the development of microbial-based biofertilizers, promoting practices that seek to minimize environmental impact and encourage sustainability.