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Brewing in a Domestic Refrigerator Using Freeze-Dried Raw Materials

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Abstract : In this study, a new brewing technology with dry raw materials is proposed with potential application in home brewing. Bio catalysts were prepared by immobilization of the psychrotolerant yeast strain Saccharomyces cerevisiae AXAZ-1 on tubular cellulose. Both the word and the biocatalysts were freeze-dried without any cryoprotectants and used for low temperature brewing. The combination of immobilization and freeze-drying techniques was applied successfully, giving a potential for supplying breweries with preserved and ready-to-use immobilized cells. The effect of wort sugar concentration (7°, 8.5°, 10°Be), temperature (2, 5, 7° C) and carrier concentration (5, 10, 20 g/L) on fermentation kinetics and final product quality (volatiles, colour, polyphenols, bitterness) was assessed. The same procedure was repeated with free cells for comparison of the results. The results for immobilized cells were better compared to free cells regarding fermentation kinetics and organoleptic characteristics.

Keywords : brewing, tubular cellulose, low temperature, biocatalyst
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