



MICROBIOLOGICAL AND PHYSICOCHEMICAL CHARACTERIZATION OF “TABERNA” A TRADITIONAL ALCOHOLIC BEVERAGE FROM CHIAPAS

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Key words: beverage, microbial composition, microbial metabolites

Introduction. ‘*Taberna*’ is a traditional alcoholic beverage, produced and consumed in southern region of Mexico and others areas in Central America (1, 2). This drink is whitish, effervescent and sweet, produced by the natural fermentation of the sap obtained from ‘*coyol*’ palm tree (*Acrocomia aculeata*). Preparation of ‘*taberna*’ involves first felling the tree, and then in the apical part of the stem a rectangular cut is made forming a receptacle, which is called ‘*canoé*’, where the sap is continuously accumulated and recollected each 12 h, in the morning and in the afternoon. Each day in the morning after the sap recollection, the ‘*canoé*’ is scrapping; a thin layer of palmito is cut to keep the vessels flowing freely. Process of ‘*taberna*’ production can be considered as fed-batch fermentation since every 12 h the sap is collected and then, the flow stars again to begin a new batch.

The aim of this study was to determine the biochemical and microbiological changes occurred in ‘*taberna*’ production.

Methods. The ‘*taberna*’ samples were obtained directly from the ‘*canoé*’ from 3 ‘*coyol*’ palms in the State of Chiapas, Mexico, during 15 days of tapping. The samples were collected before the ‘*canoé*’ scrapping was performed. Tenfold serial dilution were prepared and microbial examination was carried out in different selective culture medium for yeast, lactic acid bacteria (LAB), acetic acid bacteria (AAB), total coliforms bacteria (TCB) and aerobic mesophilic bacteria (AMB). Organic acids (lactic and acetic acids), ethanol and sugars (sucrose, fructose and glucose) analysis were performed using HPLC.

Results. The main sugar present in the sap of ‘*coyol*’ palm tree was sucrose (11.36% w/v). As shown in the Fig. 1, the sucrose concentration in the ‘*taberna*’ samples decreased, these results might be due to the inversion reaction caused by invertase activity, and this enzymatic activity is evidenced as the fructose and glucose concentration increased through the samples. At the beginning of tapping the pH values

were almost neutral (7.25), as reported in the palm wine (3), this value decreased down to pH 4 and remained constant. These changes in pH values were due to the organic acids production, mainly lactic acid (0.26-0.48% w/v). The acetic acid concentration also varied from 0.01 to 0.24% w/v.

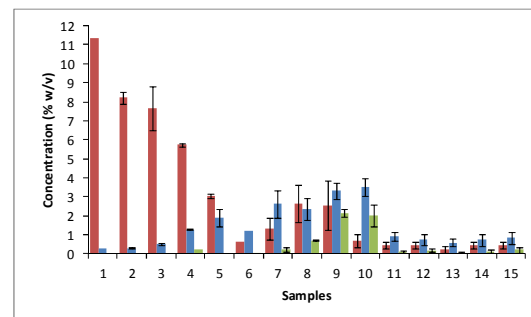


Fig. 1 Sugars concentration, sucrose (■), fructose (■) and glucose (■) present in the samples of ‘*taberna*’

The population of yeast, LAB, AAB, TCB and AMB increased slightly during the first days of tapping. Yeast counts reached 6 log₁₀ CFU/mL, whereas LAB, AAB and AMB reached counts of approximately 8 log₁₀ CFU/mL, however, in subsequent samples these microbial population decreased, it was probably caused by the reductions of the amount of sugar present in the sap, in addition to the selective conditions regarding to pH and the ethanol concentration (4.56% w/v) in the fermented sap only favoring the growth of the fermenting microorganism.

Conclusions. Alcoholic, lactic acid and acetic acid fermentation occurred during the process of ‘*taberna*’ production.

Acknowledgements. Thanks to ‘*Consejo Nacional de Ciencia y Tecnología*’ (CONACYT) by grant support for Santiago-Urbina.

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