STUDIES ON TINAPAYAN - AN INDIGENOUS FISH FERMENT IN CENTRAL MINDANAO

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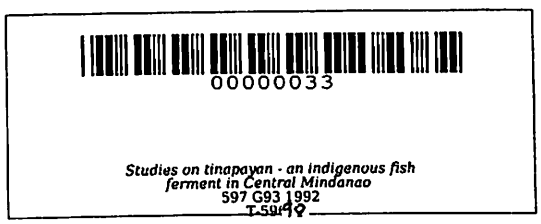

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ABSTRACT

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Tinapayan is a Maguindanaoan carbohydrate-base or Lactic Acid (LA) fish ferment prepared by fermenting anaerobically dried fillets of murrel (pangos) with a mixture of prefermented cooked rice , spices, small amount of salt and water. The product undergoes three stages of manufacture: production of tapai (Stage 1), tapai a umay (Stage 2), and tinapayan (Stage 3).

Three studies were undertaken, namely, establishment of flavor profiles of good quality market samples of tapai a umay and tinapayan; quantitative determination of microbial flora (by group) and physico-chemical changes in all stages of manufacture; and determination of the effect of additional 2.5 and 5.0 % w/w salt on the quality of tinapayan.

Tapai (ground rice, 50% water v/w, 2.0% w/w red pepper, and 0.01% w/w 2-week old commercial tapai); tapai a umay (cooked non-glutinous rice and 1.5% w/w tapai); and tinapayan (24-hour old tapai a umay, 2.5% w/w salt, 18.0% w/w langkuas (Curcuma zedoaria Berg., Rosc.),

0.18% lemon grass (Cymbopogon citratus), 1.5% water v/w and dried murrel (Ophicephalus striatus) were produced in the laboratory following the native process.

Tapai a umay resembled Southeast Asian saccharified rice, having a flavor blend of sweet, slightly sour and slightly alcoholic notes. Cooked tinapayan exhibited a chorizo-like aroma and a flavor blend closely similar to beef tapa.

Three groups of microorganism, that is, molds, yeasts and LABs which are believed to originate from the commercial starter were found growing in association in all three stages of tinapayan manufacture.

Stage 1 was governed by molds and yeasts, the LABs proliferated only between 12-48 hours when the moisture was 40-50 per cent. The dried starter (9.49% moisture) contained log 9 cfu/g each of molds and yeasts, and log 3 cfu/g of LABs.

In Stage 2 , the growth of LABs were favored, the molds and yeasts showed decreasing growth trends. The 24-hour old tapai a umay contained about log 6 cfu/g each of molds and yeasts, and log 5 cfu/g of LABs. The pH dropped to about 4.0 after 6 hours, % Titrable Acid (% TA, expressed as Lactic Acid) ranged from 0.10 to 0.30% and moisture . content increased to 67%.

In Stage 3 , the molds and yeasts maintained their population at log 6 cfu/g. The LABS reached log 7 cfu/g on

day 9. The pH of the system ranged from about 5.0 to 6.0, % TA had its peak at 1.0% and the product has an average % salt content of 4.86% after the 15th day of fermentation.

The addition of 5% salt (about 7.0% in the final product) in P3 sample resulted to a reduction in the number of yeasts to log 5 cfu/g and LABs to log 5 cfu/g, and an increase in the number of molds to log 6 cfu/g. The pH of the system was low ranging from 5.5-6.5 with a correspondingly low amount of % TA (0.51% average). The odor, flavor and general acceptability of the cooked product was comparatively inferior than that of the market sample.

The fish ferments with final salt contents of about 5.0% or less, that is, with additional 2.5% w/w salt and with no additional salt had better sensory and acceptability scores than the P3 sample. Both products attained the characteristic odor and flavor scores similar to the market sample in less than 15 days of fermentation. The general acceptability scores were also good.

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I. INTRODUCTION

An indigenous fish ferment produced commercially, although still on a small-scale level by the Maguindanaoans was documented recently by Guerra (1991, unpubl.). The product is known in Maguindanao Province as Tinapayan and is made from the anaerobic fermentation of a mixture of previously fermented cooked rice, spices, a small amount of salt and fillets of dried murrel.

Tinapayan is relished as a main dish by the populace and is prepared for the table by sauteing the fish portion with garlic until the latter is reddish brown in color. The cooked product is relatively stable and lasts for a month or more under ordinary storage conditions.

The carbohydrate-base fish ferment closely resembles some renowned lactic acid (LA) ferments in Southeast Asia but differs in the overall sensory characteristics and in certain aspects of preparation.

In general, the process begins with the production of tapai (starter) that is used as inoculum for tapai a umay (rice ferment) which in turn is used as a component of the admixture required in the production of tinapayan.

Consequently, it appears that the product is governed not only by the lactic acid bacteria as in most