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Study of Ami Maka Ana (Traditional Fermented Buffalo Milk) as Nutritional Food at Los Palos East Timor

by I Nyoman Puspawati
Study of *Ami Maka Ana* (Traditional Fermented Buffalo Milk) as Nutritional Food at Los Palos East Timor

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Abstract — The study was conducted to determine the public attitude toward the existence of traditional food *ami maka-ana* (AMA) prepared by addition of *maka wele* (alip-bark) in to buffalo milk at Locales. The method used were explorative and laboratory research, for determining the location was based on the method of purposive sampling, in which 4 villages in the sub district of Locales was chosen as the location of the study. The samples of AMA were collected from each village which were tested organoleptically and chemical composition at Food Nutrition Laboratory of FTP-Umad Denpasar, Bali, Indonesia. The results showed that panelists were like the taste and overall acceptance by its characteristics such as moisture (50.15%), ash (2.00%), protein (18.32%), fat (20.78%), lactose (3.68%), total acidity (0.86%), total solids (49.95%), total solids non fat (34.71%), total count (5.65 x 10⁵ CFU/g) and lactic acid bacteria (2.15 x 10⁴ CFU/g).

Keywords — buffalo milk, and *ami maka-ana, maka wele*

I. INTRODUCTION

Timor-Leste is a tropical country with an area of 14,874 km² which lies between Indonesia and Australia. As a tropical country with a population of 1.133 million people, Timor-Leste has enormous natural potential to be developed as a real contribution to national development. National development in order to improve people’s lives focusing on rural development. It is based on a demographic considerations that indicate by the population of Timor-Leste approximately 84% live in rural and subsistence farmers [3].

Diversification of animal-based food buffalo milk is expected to cover the shortage of milk production in the country and reduce imported milk from other countries that drain the country’s foreign exchange. When the buffalo dairy products can be developed it is expected that the buffalo dairy farm business can be improved. However, the government has not attention for buffaloes developing farm, whereas buffaloes are tropical animals that can adapt to the tropical climate of Timor-Leste, that plays an important role as a working farm, a source of meat, milk and transportation resources in rural areas. At Los Palos area there is processed products from buffalo milk as a curb-like appearance called *Ami Maka Ana* (AMA) (Fig. 3). The AMA manufacturing process is very simple; in which is the fresh buffalo milk poured into the sauce of panie and dipped an *alip-bark* (they call maka wele,) (Fig.2) then heated for 45-60 minutes until the clot is produced. AMA is one of the traditional food, very tasty and healthy that preferred and commonly consumed as a side dishes of the people at Los Palos. Based on the above facts, AMA is a unique traditional food and very interesting to study.

Administratively, the sub district of Los Palos consist of 10 villages, with a total area of 624 km² with total population was 29,711 (15,053 man and 14,658 woman) and 4,164 head of buffaloes. Generally, buffaloes still maintained with a traditional method, but potentially able as: a source of labor, meat, milk, producing manure, and craft materials, however the buffalo also used as an indicators of high social rank among the public, especially at weddings, events and death rituals.

*Alip-bark* has been known as a coagulant agent for manufacturing of traditional buffalo milk (*ami maka ana*) by most people at Fatuluku Lautem since ancestors. In Indonesia, *Alip known by the trad name Rampelas,* also
known as hampelas (Malay), hampelas (Sunda), rampelas (Java), somona (Halmahera) and sosoma (Ternate). In the
description mentioned that habitus: tree, 10-20 m tall, stems:
erect, rounded, branching simpodial, rough surface,
brownish green; leaf: single, alternate, oval, serrated edge,
pointed tip, base tapered, 15-18 cm long, 4-6 cm wide, rough
surface, pinnate, green, flower: single, and seeds: round,
white; and taproot (Anon., 2010b). Further stated also that
the leaves, roots and stems F. amapel contains of chemicals
such as saponins, flavonoids, polyphenols and tannin.
These chemicals are similar to the crown god tree that used
as : boost the immune system, anti-inflammatory, and as an
antihistamine.

II. RESEARCH METHODOLOGY

Implementation of the research took place in two stages
such as exploratory and laboratory research. Principal
parameters observed in this study are; characteristics,
knowledge and perceptions of the respondents were
associated with respondents' attitudes through interviews.
While other parameters measured were: organoleptic sensory
evaluation test, water, protein, fat, lactose content, solids
non fat and total solids, total acid, total microorganism
and total Lactic Acid Bacteria content.

III. RESULTS AND DISCUSSION

People who like AMA is (66.67%) included in the
working age group, while the remaining (33.33%) were in
the elderly group. Old group is the most widely know and
take pride in the presence of AMA. Of the elderly should be
able to transfer the knowledge to younger age group AMA
so as to know the AMA and maintain its existence as a
traditional food.

Dry land of the villages can be used extensively for
farming system (plantation also be used for raising livestock).
The dry land ownership and the availability of a vast desert expanse, considered the potential for the
maintenance and development of buffalo breeding for meat,
milk used as raw material for the manufacture of AMA. This
means that large amounts of land owned by a person closely
related to the attitude of the person ability to develop the
farm, which was originally a small farm into a big business.
More or less animals own by the people will affect the
motivation of farmers to be more active and more positive
attitude toward traditional food AMA or in to the field of
animal husbandry.

The attitudes significantly different influenced by the
knowledge and perceptions of the respondents (maintaining
traditionally the habit of existing heritage). Different
attitudes of each village can be accepted in a reality for
using raw buffalo milk and Alip bark as the coagulant, but
since the era ancestor until now there has been no process
for making AMA standard in each of the village. In addition,
the presence of AMA in the sub district of Los Palos has not
been touched by Science and Technology.

A. Sensory evaluation

Sensory evaluation conducted by hedonic and scoring
test (Soekarto, 1985). Hedonic test is used to determine the
level of AMA acceptance include the taste, flavor, and
overall acceptance, while for color and texture evaluation
was done by scoring test. The panelist used in this
evaluation as many as 30 peoples.

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<tr>
<th>Parameter</th>
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<th>Bauró</th>
<th>Raça</th>
<th>Home</th>
<th>Mean Score</th>
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<tr>
<td>Color</td>
<td>6.4</td>
<td>6.4</td>
<td>6.4</td>
<td>6.3</td>
<td>6.4</td>
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<tr>
<td>Tekstur</td>
<td>4.1</td>
<td>4.1</td>
<td>4.4</td>
<td>4.4</td>
<td>4.3</td>
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<tr>
<td>Flavor</td>
<td>6.3</td>
<td>6.3</td>
<td>6.2</td>
<td>6.2</td>
<td>6.3</td>
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<tr>
<td>Taste</td>
<td>6.7</td>
<td>6.7</td>
<td>6.5</td>
<td>6.3</td>
<td>6.6</td>
</tr>
<tr>
<td>Acceptance</td>
<td>6.7</td>
<td>6.7</td>
<td>6.6</td>
<td>6.4</td>
<td>6.6</td>
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</table>

The average data of sensory evaluation was taken from
the best AMA prepared of each village (Table 1). From the
results of the mean sensory evaluation score such as : color : 6.4 (yellowish white), texture 4.3 (regular / neutral), aroma
6.3 (love), taste 6.6 (really like), and overall acceptance 6, 6
(really like). AMA texture with an average score of 4.3% is
said regular / neutral. AMA texture with neutral category is
due to the water content. The results of the taste test and
showed that the overall acceptance panelists like the food
very much, then it is an indication that the sub-district of
Los Palos community remains positive about the existence
of traditional food (AMA).

B. AMA Nutrition Analysis

The water content, protein content, fat content, ash
content, lactose content, total acid, and total solids content
of AMA were used as parameters that analyzed in the
laboratory include total colony and lactic acid bacteria count.
Data analysis of the nutrient content of food traditional
AMA was presented in Table 2.
As a traditional food made from buffalo milk is coagulated by addition of Maka Wele Table 2 show the nutritional value of AMA produced in the sub district of Los Palos. However, in manufacturing process sanitation should be considered to produce AMA in a good quality and safe for consumption. The water content of 50.15% (Table 2) indicated that AMA almost the same as semi hard cheese (44 to 55%) [8].

The protein content of AMA 18.15% relatively normal levels of the food, further explained that this protein is obtained from the modified casein to the curd. The one advantage of the fermented milk products (AMA, Dahi, yogurt) can used as protein source due to the essential amino acid content [10].

Table II

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<th>Component</th>
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<tr>
<td>Fat (%)</td>
<td>3.90</td>
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</tr>
<tr>
<td>Protein (%)</td>
<td>3.40</td>
<td>4.74</td>
</tr>
<tr>
<td>Lactose (%)</td>
<td>4.80</td>
<td>4.64</td>
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<tr>
<td>Ash (%)</td>
<td>0.72</td>
<td>0.78</td>
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<tr>
<td>Water (%)</td>
<td>87.10</td>
<td>82.44</td>
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<tr>
<td>Total Solid (%)</td>
<td>12.90</td>
<td>17.56</td>
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As we see at Table 3, the solid content of raw buffaloes milk (17.56%) were much different than total solid of the AMA. The reason due to water content that evaporated during heating process while its manufactured. The highest total micro organism count of AMA is $7.1 \times 10^4$ CFU/g, was produced at Racca village (Table 2). The presence of micro organism in AMA may be an indicator of poor sanitation process and contamination possibility in the process of packing and shipping the samples from Timor Leste Food Chemistry analysis laboratory at Technology agricultural Faculty Udayana University Denpasar Bali Indonesia. The properties of the milk may change effectively by the activity of the microorganisms in AMA. Lactic acid bacteria (LAB) analysis data in Table 2 shows that the AMA samples taken from four villages in an average of 2.15 x $10^4$ CFU/g. LAB contained in the AMA may be derived from the bark of Alip, so it can also supported for clotting the milk (curd). Curd effect of buffaloes milk may due to coagulate precipitated (80% milk protein) on the pH of isoelectric point (pH 4.7), this condition due to the onset of lactic acid can cause a drop in the pH of the milk (Sugihita and Rai, 2012). By knowing AMA contain in amount of lactic acid bacteria (LAB), which is indispensable to the consumers health, so it is expected to open up opportunities for the existence and development of traditional food (AMA) to the high nutritional value and beneficial food to human health in the future.

IV. CONCLUSIONS

Based on the results, the conclusions can be drawn that AMA is one of traditional food at Timor Leste should be developed by high technology process for food sustainable, because Food AMA is preferred by panelists in terms of taste and overall acceptance, good quality with objective characteristics of water (50.15%), ash (2.00%), protein (18.15%), fat (20.78%), lactic (3.68%), acidity (0.86%), total solids (49.95%), solids not fat (34.71%),
total microorganism count (5.65 x 10^4 CFU/g) and lactic acid bacteria (2.15 x10^4 CFU/g). and positive attitudes of Los Palos community for AMA existence.

The government and non-governmental agencies should give attention and support the procurement of high genetic quality of local cattle and buffalo in order to increase the milk production ability of cattle and buffalo, so the existence of AMA will meet the animal protein requirement of Timor Leste community.

Should be conducted a research on alip bark for identification those component that play a role in buffalo milk clotting process and its effect for human health.

REFERENCES
Study of Ami Maka Ana (Traditional Fermented Buffalo Milk) as Nutritional Food at Los Palos East Timor

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