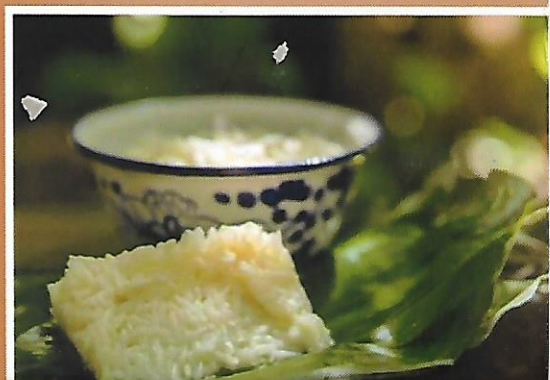


THE
UNIQUENESS OF

ASEAN
FOOD

Edited by:
Winiati P Rahayu
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TAPAI

GIYATMI AND RINDIT PAMBAYUN

(THE INDONESIAN ASSOCIATION OF FOOD TECHNOLOGISTS)

DESCRIPTION AND UNIQUENESS

Tapai is an Indonesia Indigenous fermented food, made from cassava or glutinous rice, through fermentation process. There are several steps for *tapai* processing; steaming (peeled cassava or rice), cooling, inoculation, and fermentation. The starter used for inoculation, namely *ragi tapai*. Traditionally, *ragi* is made from rice and certain spices such as garlic, red onion, red chili, and galangal. All are milled into pasta, flattened, incubated for two nights and then dried in the sun. The *ragi* contains molds, yeasts, and lactic acid bacteria. *Tapai* quality is influenced by its raw material, *ragi* and fermentation condition. The raw material for *tapai ubi* is cassava tuber containing low linamarine, glucoprotein, and fiber as well as high amilopectin. After being peeled, glucoprotein on the tuber surface must be removed, since it retards amylase activity. Improvement of *tapai ubi* quality begins with *ragi* development which focused on monocondiment formulation. Rice is mixed with garlic with 2:1 ratio and then milled. These steps are followed with dough making, *ragi* formation (round flat) (weight 3.2 g), wind-drying, inoculation with 1.5 (w/w) percent germ, fermentation at 28–32°C for 2 nights and drying at max. 42°C. The rice should contain high amylose, whereas garlic should be free from red colour and dried peel. On the other hand, process development of *tapai ubi* laid on simple bioreactor preparation which can be set aerobically. This led to amylolytic (starch hydrolysis) activity and not glycolytic (sugar conversion into ethanol) activity.

Therefore, the result of *tapai ubi* is sweet and has hard texture with or without ethanol. Since *tapai ubi* shelf life is only 3 days, it should be packaged in air-permeable material in order to maintain aerobic condition. So that *tapai* texture remains hard and its shelf life can be extended up to 1 month. The second alternative is to stop fermentation process by heating using oven. This results in microorganism death, formation of maillard and caramel compounds on *tapai* surface, improvement of flavour and taste and also shelf life extension up to 1 year in vacuum packaging.

RAW MATERIALS AND ALTERNATIVES

The main raw material for *tapai* production in Indonesia are cassava tubers and gelatinous rice. As the alternative raw materials, *tapai* also can be prepared from any carbohydrate-high-content materials, such as sweet potato, breadfruit, taro, as well as cereals.

PRODUCTION PROCESS

Product processing for *tapai* consists of raw material preparation, sortation, steaming, cooling, inoculation, fermentation. The process steps of production process is shown in Figure I.28.

HOW TO CONSUME

Commonly, *tapai* is consumed freshly soon after the fermentation finish. Moreover, some people preserves *tapai* by using more process to related product, such as *tapai* caramel, *suwar-suwir*, fried *tapai*, as well as *dodol tapai*.

NUTRITION FACTS

As mentioned by Steinkraus *et al.* (2004) during fermentation, protein of *tapai* increase to 16%. Furthermore, thiamine increase to 300%. In fact, *tapai* has high nutritive value such as it contains 172 kilocalorie, 3 g protein, 37.5 g carbohydrate, 0.5 g lipids, 6 mg calcium, 35 ml phosphor, and 0.5 mg ferrous. Furthermore, *tapai* also has high content of several vitamins, such as thiamine and other vitamin B in 100 gram of *tapai* (DKBM 2011).

PRODUCTION DEVELOPMENT

Development of *tapai* was reported by Candra *et al.* 2014. Fresh product has shelf life only for 34 days (Law *et al.* 2011). So, the development of fresh *tapai* mainly focused on the primary packaging using permeable materials. Using permeable packaging, fresh *tapai* will have longer shelf life. Recently, *tapai* is developed by partial fermentation in order to make *tapai* with good texture and high quality in order to be able to be exported to other countries. Furthermore, *tapai* processing also has developed into caramel *tapai*, which has longer life span.

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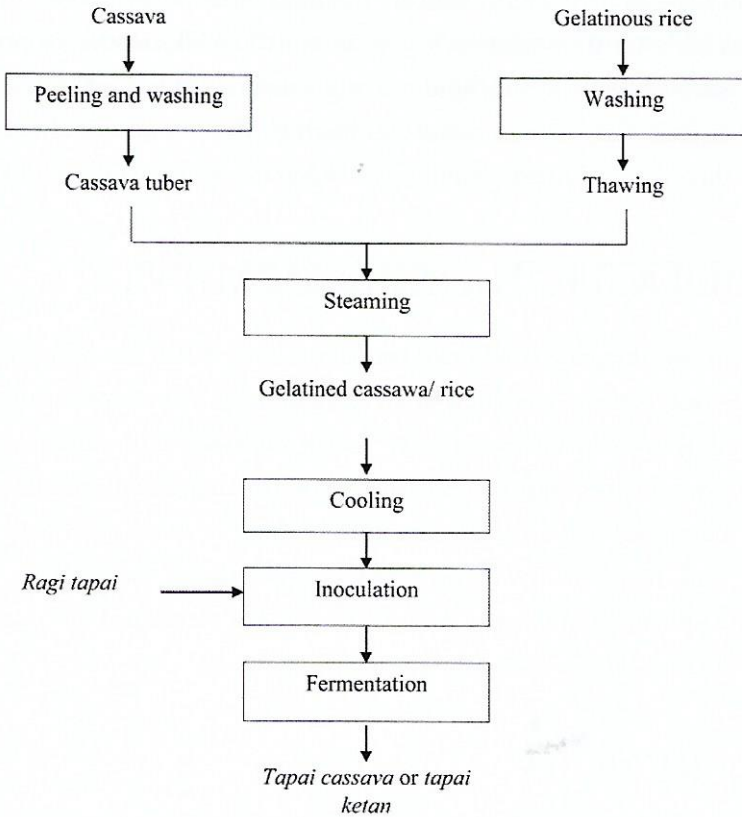


Figure I.28. Flow chart of *tapai* processing

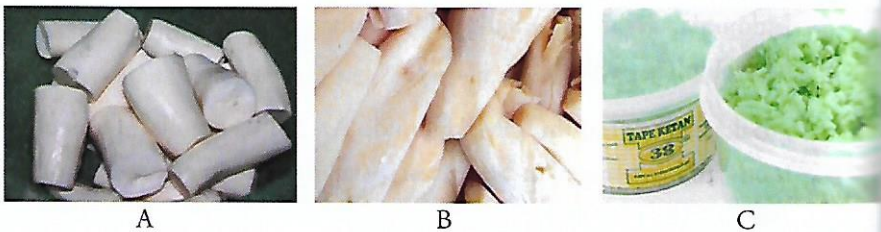


Figure I.29. (A) Cassava, (B) *Tapai* cassava, and (C) *Tapai* Rice



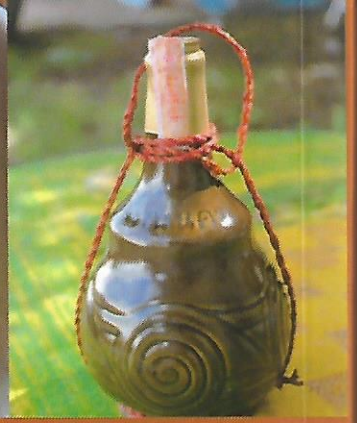
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