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Significance of Moringa Noodles for Increasing Breast Milk

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ABSTRACT

Moringa oleifera leaves have a number of nutrients, such as protein, minerals, vitamins, calcium, potassium, iron and other mineral elements. In this study Moringa noodles has been prepared by the substitution of Moringa leaves flour in various proportions and used as nutritional supplement for lactating mothers. It has been found that the Moringa noodles have more lactation than other types of noodles. Since the Moringa leaves were rich of various nutrients and properties to increase lactation, there was urgent need to manufacture cost effective Moringa noodles. The optimum conditions for wheat flour, distilled water, *Moringa* powder were set and other ingredients were mixed in the various ratios. The optimal quantities of ingredients were added to enhance sensory valuation of *Moringa* noodles. The used Moringa leaves powder in noodles may increase income of farmers and alleviate under nourishment of the infants at 0 to 6 months old.

Key words: Moringa noodles, nutritional value, breast milk, lactation, malnutrition

INTRODUCTION

It has been observed that the deficiency of nutrient intake and infection are two direct factors of malnutrition towards baby and child¹⁻³. This was a consequence, which brings the effect on the lack of both macronutrient and micronutrient that are really required for the early child growth and development. A number of studies in many developing countries reveal that the main factor of malnutrition and the hindrance of growth of 3 to 5 month infants are tightly correlated to the low breastfeeding rate^{4,5}. Fulfilling the nutritional needs for infants at 0 to 6 months old was absolutely obtained from exclusive breastfeeding⁶⁻⁸. In response to this, the improvement of nutrition of the 0- 6 month old infant was implemented through the improvement of maternal nutrition before and during exclusive breastfeeding period. This was in consideration to that the malnutrition at the age less than 2 years will bring an effect on the disorders of physical growth, brain development, intellectuality, and productivity in which most of these impacts were irreversible. All of baby's required vitamins and nutrients were supplied through breastmilk. Breast feeding exclusively during the first six months of a baby's life is essential for protecting an infant from various illness, as breast milk is packed with disease-fighting substances.

Breastfeeding should preferably be continued up to at least two years in order to protect the child from various forms of malnutrition. According to the World Bank, rates of malnutrition among India's children were nearly five times more than in China and

twice those in Sub-Saharan Africa. Seeing the importance of mother breast milk, the government attempts to campaign the significance of breastfeeding for mothers. It was found that not all mothers just giving a birth to baby are able to breastfeed at ease thus impelling to use any chemical or traditional medicines that are able to make breast milk smooth (i.e., lactagogum effect)⁹⁻¹².

Moringa oleifera flour is one of food stuffs used in the process of making dried noodles as an improvement of food stuff which in return can enhance the productivity of mother breast milk. In Indonesia, noodles for the taste, practicality and satiation have been becoming a favorite food for walks of life started from children to elders. Having high carbohydrate content, noodles, instead of rice, then are used as the carbohydrate sources¹³.

A number of studies in many developing countries reveal that the main factor of malnutrition and the hindrance of growth of 3 to 5 month infants are tightly correlated to the low breastfeeding rate. In Indonesia, it was found that the rate of infant obtaining the exclusive breastfeeding until 5 month was only at 14% and those obtaining the exclusive breastfeeding until 6 month was only 8%¹⁴. It was also reported from the result of a survey that 38% of mothers stop giving breastfeeding for the infants by reason of insufficiency of breast milk production¹⁴.

The intention to result in food that can enhance the productivity of the mother breast milk must concern with some factors determining the lactagogum effects. Considering that more than 90% of manufacturing process can damage the content of lactagogum compound, it becomes essential to consider the effect of the process on lactagogum. A process, in this case, must concern to maintain the compound condition that can increase the production of breast milk. In the various studies above, it is necessary to conduct a research on *Moringa* leaves in the manufacture noodles. In this research a method for making noodles has been successfully developed by using other ingredients which enhanced palatability in the noodles.

In response to the above discussion, it is necessary to conduct a research on the stability of *Moringa oleifera* in the manufacturing process in order to determine a number of parameters to control the handling process. In this research, the methods of making noodles are using various ingredients and being optimized to produce tasty noodles (Fig. 1).

To overcome the nutrition problem in noodles, fortify them with *Moringa* powder.

- *Moringa* leaves powder can enhance the protein and mineral content in the noodles

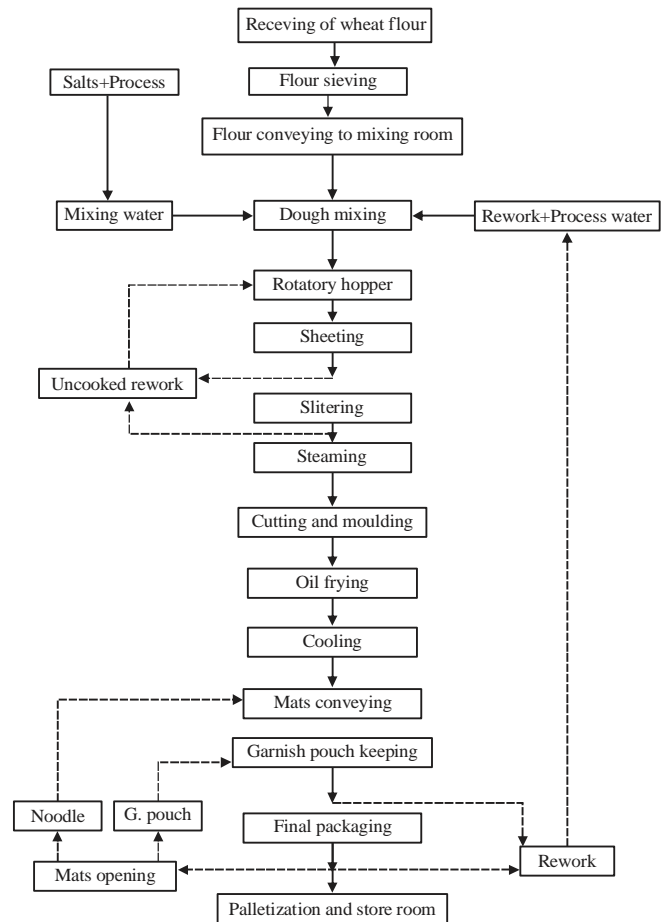


Fig. 1: Standard manufacturing procedures of moringa noodles

- To create a new concept of Health, Wellness and Nutrition of quality noodles
- First Time in India the concept developed by the Nutrelis Agro Foods

EXPERIMENTAL RESEARCH

The leaves of *Moringa oleifera* were obtained from District Fatehpur, Uttar Pradesh, India. The leaves harvested here were the ones in the third and fourth stalks from the tip of the leaf from 1-3 year old plant that had not borne fruit before. Noodles contain wheat flour, vegetable oil, salt, *Moringa* leaves powder etc. Tastemaker contains sugar, spices powder, hydrolyzed peanut protein, onion powder, garlic powder, citric acid and tapioca starch. Wheat flour and other ingredients obtained from local market.

In order to improve the nutritional value of the noodles products, added some ingredients in noodles while preparing



Fig. 2: Moringa noodles



Fig. 3: Ready to eat moringa noodles



Fig. 4: Moringa noodles extruder

of *Moringa* noodles (Fig. 2-4). In this research, the wheat flour was used as the raw material, adding appropriate amount of

Moringa powder and studied on the best composition of *Moringa* noodles. The best conditions for wheat flour: water: *Moringa* leaves powder was mixed with the ratio of 100:40:10, 90:40:15, 110:45:10, 90:35:15. The weight of noodles was adjusted with the average weight of noodles. First take the appropriate amount of raw material (the salt dissolved in water in advance), then stir them to make it mixed evenly, next knead the dough to place the dough fluffy and forming by pressing then put into rotatory hopper, sheeting, slitering cutting and moulding, oil frying cooling, packing storage and transportation.

SENSORY EVALUATION OF MORINGA NOODLES

This research was conducted through Randomized Block Design for testing effect of lactogogum. *Moringa* leaf flour was mixed into formula of noodles product for one meal (80 g). The sensory score was taken as the investigation index in order to determine the best product formula.

CONCLUSIONS AND SUGGESTION

It can be concluded that the noodles substituted by *Moringa oleifera* leaves powder is able to increase the productivity of breast milk in lactating mothers. Several things that can be developed related to the result of this research are as follows: The use of *Moringa oleifera* leaves for the culinary of breast feeding mothers still needs an application to daily dish in order to make it sustainably consumable. In addition, it also needs further socialization of *Moringa oleifera* related to the myth of people towards such foodstuff. Increased levels of prolactin (essential for the production of breast milk) and significant levels of weight gain among their babies when they took moringa leaves immediately after giving birth. Other studies show increased levels of milk production after taking moringa.

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