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THE UTILIZATION OF CORN COB´S CRACKER AS ANTICIPATION OF HARVEST FAILURE FOR ECONOMIC IMPROVEMENT FOR FARMER IN NARIGUNUNG 1 VILLAGE, KARO REGENCY

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Abstract

Narigunung 1 village is one of the villages located in Tiganderket District, Karo Regency, and North Sumatra Province. The community in this village consists of 150 heads of households whereby 90% earn a living by farming. The community manages various kinds of horticulture plants, especially vegetables and fruits, i.e. corn. The Geographic Village, which is located near to (± 8 km) the bottom of Sinabung mount, causes people often get crop failures, since the hot wind released from the Sinabung mount. Especially at the dry season, since the village is far from the source of water, therefore only relies on rain drops both for daily needs and for their agricultural lands. Failure of this harvest can reduce the economic welfare level of the community in the village. This community service activity was carried out, with the aim to stimulate the farmers and the community in Narigunung 1 village to make cracker businesses as a means of improving community welfare. The activity was carried out in the form of lectures, discussions, practice of making crackers from corn cobs, dissemination of food additives that were good for health, and the distribution of modules. After this service activity, the community in Narigunung 1 has been able to make crackers by utilizing corn cob which increases the economic value of the corn cob, using a grinding machine as a transfer knowledge of science and technology in the community and gain comprehensive knowledge about additional ingredients that are good for health.

Keywords: Narigunung 1 Village, Corn Cob, cracker, additional ingredients.

1. INTRODUCTION

Maize production in Indonesia shows an increase every year. According to the data from Indonesian Ministry of Trade, 2015, the 2013 corn production rate reached 18.51 million tons. In 2014 it increased to 19.03 million tons. But, Indonesia still imports corn with a volume reaching 3.2 million tons [1]. The corn plants have many benefits, because this plant can be used for various purposes. In medicine purposes, the used part of the plant can come from the corn hair and corn cobs. Corn hair has a diuretic effect and soluble kidney stones. Mukhsin, 2006, also reported that the corn cobs at a concentration 150 µg / ml have the highest phenolic content and can be used as active sunscreen with an SPF value of 16,542. The corn cobs are composed of complex lignin compounds, hemicellulose and cellulose [2]. The corn cobs contain high carbohydrates which can be used as food ingredients by the community.

Crackers are one of the popular dry foods in Indonesia that containing high starch ingredients. Crackers are a simple side dish, and the taste is tasty and delicious which can increase appetite. Cracker has a relatively long shelf life and it is easy to be produced by using a simple tool [3]

Narigunung 1 village is one of the villages located in Tiganderket District, Karo Regency,

and North Sumatra Province. This village consists of 150 heads of households (KK), which 90% are a farmer. From the geographical location, this village is located on a plateau, so it is very good to plant horticulture crops such as vegetables and fruits. However, the position of the village is not too far away (± 8 Km) from the bottom of Sinabung mount. When the Mount is in an alert condition that occasionally produced hot winds, it could cause crop failures. Water sources that are very far away cause people to rely solely on rainwater both for their daily needs and for their agricultural land. Moreover, in the dry season, it will cause more risk of crop failure.

Our community service team comes to offer the program to solve the problems and to anticipate the crop failures for farmers and the community. We make a training and workshop to introduce and use the technology to process one of the agriculture wastes (Corn cobs) to become cracker, so it will increase the economic value of the corn cobs. These methods are one of the results of research by pharmacy student in 2007. Hopefully, the cracker from corn cobs can be sold to increase the economy of farmers and the community in Narigunung 1 Village.

2. IMPLEMENTATION METHOD

The implementation method from the Community Service activities involving two partners in Narigunung 1 Village. The activities used the lecture and discussion methods and training was accompanied by the practice of making processed crackers from corn cobs, and the dissemination of good food additives.

2.1. Device Setup

The service device prepared was in the form of a training material module for the manufacture of processed crackers and the delivery of safety food additives.

2.2. Implementation of Activities

The activity was carried out on 2 partners namely the mosque's board (DKM) of Al-Hidayah Mosque and the Village Head's Office. The participants are divided into 10 groups consisting of 5 people. The activity was divided into 3 sessions:

1. Presentation Session about food additives,
2. Training on how to make processed crackers
3. Distribution of modules

2.3. Preparation of Processed Crackers

The preparation of cracker dough was conducted by mixing the main ingredients and additives,, stirred evenly, then kneaded by hand so that the clay is dense and homogeneous. After that, ¼ part of tapioca flour mixed (substituted in part mashed cornflakes), water, salt, sugar, eggs, onions and coriander which have been crushed with a grinding tool, so that the mixture is obtained like porridge. The mixture was put into plastic, wrapped and steamed until cooked (± 40 minutes). The dough has been cooled, then ground so that the thickness is thin (± 1-2 mm) and molded as desired. After printing it is dried under the sun until it is completely dry.

Presentation of food additives was delivered to the participants before training on how to make processed crackers. Each participant was given a module that contains information material. After delivering presentation material, participants were given time to discuss and ask questions about material that was not yet understood.

3. RESULT AND DISCUSSION

The processed crackers from corn cobs are new for all of the participants, so they were very enthusiastic to take part in the training. The participants were active to discuss how to make processed crackers from the corn cobs. During the training the participants succeeded in making processed crackers from corn cobs and they could tasted the crackers. The training activity of making processed crackers from corn cobs can be seen in Figure 1.

Figure 1. Training Activities for Making Crackers from Corn Cobs

Figure 2. Corn Cob Milling

The community service team also taught the processing of crackers preparation from corn cobs using equipment to simplify and speed up the process. The equipment used in this training were grinding machines and packaging machines and it can be seen in figure 2. The grinding machine is used to grind the corn cobs so that they become powder and can be mixed with other ingredients to make raw crackers. The raw crackers that had been molded and dried were fried, and at the end of the training the crackers were packed using a packing machine. The equipment was handed over to the head of the partner group who attended the training.

The crackers from corn cobs had a distinctive odor, a brownish color and a savory taste as shown in figure 3. Taste, odor, and color are the most important factors in determining decisions for consumers to like a food product. Even though the value of other parameters is good, if the taste is bad or disliked, the product will be rejected by the community. There are four basic types of taste known to humans, namely salty, sour, sweet, and bitter [4, 5].

Figure 3. The Crackers from Corn Cob

Water content indicates the amount of water contained in the material [6]. Water content is an important parameter, because it can affects the texture, taste and storability of the crackers. If the water content is high enough, it can make the cracker get bacteria and molds to multiply, and change the quality of the food. According to SNI number 01-2713-1999, the water content in crackers should not be more than 11% [7].

Good crackers had good swelling ability, processed crackers from corn cobs had a swelling ability of up to 165% from their original shape after being fried. This process is determined by the drying process and frying temperature [8] Swelling ability will be good if the drying process is good (low water content). Swelling ability is calculated by looking at changes in the area of crackers

before and after frying. Development occurs because of the vapor pressure formed by heating the water content of the material. Storage time is also a consideration to see the quality of crackers. Processed crackers from corn cobs which were stored in plastic clip containers at room temperature still showed that they were suitable for consumption and not rancid in a 4-week storage period. The length of storage of crackers will affect the level of hardness, water activity and swelling volume of cracke [9].

4. CONCLUSIONS

The community service activities carried out by the implementation team from the USU Faculty of Pharmacy provide benefits to partners in making processed crackers from corn cobs. Partners have been able to make processed crackers from corn cobs using technology so that it can be a solution for farmers and the people of Narigunung 1 Village to overcome the economic decrease due to the crop failure. Partners understand the good food additives after the socialization

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