

PROCESSING AND PACKAGING TECHNOLOGY APPLICATIONS TO EXTEND THE STORAGE IN THE TRADITIONAL HERBAL INDUSTRY

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Abstract

During a pandemic like today, a very strong immune system is needed to maintain the body's resistance so that it is not easily exposed to disease. Strong immune power is produced from foods and beverages that contain good nutrition and nutrition for the health of the body. One of the drinks that can increase the body's immune power is Traditional Jamu which is well known to the Indonesian people, because Indonesia is very famous for its rich herbal ingredients that have many health benefits. There are so many kinds of herbs that can be found in our country that many foreigners even hunt, because the properties contained in herbs are needed for body health and are rarely found in other countries. This is an advantage for us Indonesian people, who clearly will have no trouble getting raw materials to mix herbal drinks. This is an opportunity for our society, so that they can develop traditional herbal drinks to be more modern and penetrate the global market. This of course requires touches of renewable technology, so it is hoped that traditional Indonesian herbal drinks can be marketed to the wider community and the biggest hope is to enter the international market.

However, in reality, there are several obstacles faced by traditional herbal drink manufacturers. Among them is the resulting product has a short shelf life. For this reason, it is necessary to transfer the right processing and packaging technology so that the product shelf life is longer. The method used in this research is a touch of transfer of processing technology and packaging technology to extend the shelf life of the traditional herbal medicine industry in Majalengka, so as to improve product performance.

Keywords: traditional herbal medicine, processing technology applications, packaging technology.

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Introduction

Traditional medicine called jamu is one of the elements of the nation's culture. According to a Javanese proverb, Jamu is defined as the Charm of Usodo which means Prayer for Healing. In general, these ingredients come from raw materials in the form of medicinal plants. Traditional medicinal products are not only consumed by people in the country but also by consumers abroad. The use of herbal medicine is now developing into forms that are practical and easily available in the market, including in the form of herbal powders, pills, capsules and even bottled drinks, all of which are aimed at breaking through market opportunities as well as providing substantial economic benefits.

The large number of enthusiasts of traditional medicines has led to the development of businesses in this field, both on a small scale such as jamu carrying and herbal steeping to large herbal medicine companies that produce herbal powders, herbal capsules, pills, tablets and liquids. In the past period, the herbal medicine industry experienced a production sluggishness caused by several factors, but at this time it has been able to experience quite significant developments, especially since the outbreak of the COVID-19 virus pandemic. Although it can be said that it is not fully able to compete with the chemical drug industry, herbal medicine still has quite a lot of enthusiasts because it is considered safer because it is made from natural ingredients.

This is quite realized by Yayuk Darti, a business actor who started as an herbal medicine trader who carried out the production process manually and traditionally, having his address at Jl. K.H. Abdul Halim Gang Paledang RT 001 Rw 011 Majalengka Wetan, in order to develop its production in a more modern way with a touch of renewable technology. The traditional herbal

medicine produced by Yayuk Darti is a home industry or what we often refer to as Home Industry, using natural fresh ingredients and no artificial preservatives, so it is widely liked by consumers. This is proven by maintaining the loyalty of customers who always consume this traditional drink regularly.

This is the reason as an opportunity as well as a challenge, how to make traditional herbal medicine entrepreneurs expand their market share to meet consumer needs. However, in fact, under field conditions, this traditional herbal product has a relatively short shelf life, which is only 2 days at room temperature and 4 days at refrigerator temperature. So that product marketing is only around the Majalengka area and production is based more on orders (made by order), so that sales turnover is fairly minimal. In contrast to herbal medicine produced by industrial manufacturers, the quality is relatively better than herbal medicine produced by households because the workmanship and inspection are more stringent under the supervision of competent experts so that they can reach a wider market share.

Therefore, the author intends to provide a reference to the small and medium-sized business industry, especially the Home Industry to pay more attention to the food safety side by adding processing technology and applying packaging technology that is more hygienic and has more commercial value in order to be able to have a positive impact on family income and also absorb more manpower.

Research Method

Design, place and time

The method implemented in this research activity is counseling and mentoring activities involving Yayuk Darti traditional herbal medicine business actors in the Kaputihan Gang Paledang Majalengka Wetan neighborhood as the target object of implementing technology transfer research in the form of product processing technology and packaging technology with standardized labeling carried out with active learning methods . Through this method, the business actor/target object is given an understanding first and then actively assisted.

Assistance is carried out with the aim of applying herbal processing technology and packaging technology. Assistance is needed so that the implementation is carried out properly and so that problems that arise and are found in the field can be immediately identified. In this process the target object/business actor can also play an active role starting from planning the determination of packaging design, application of processing technology to products and evaluation of existing alternatives in accordance with field conditions as well as the technical and financial capabilities of the target object. The joint learning process is carried out through 5 meetings held at the home of the business actor in this case is Yayuk Darti, with the material adjusted to the following activity stages:

Meeting	Suggested material for discussion	Target Audience	The Meeting Place recommended
I	Traditional herbal medicine processing technology 1. Critical point of processing 2. Sanitation	Listening & Discussion	Yayu Darti Traditional Herbal Medicine Entrepreneur's House
II	Accompaniment	Active participation in production activities	Yayu Darti Traditional Herbal Medicine Entrepreneur's House

III	Packaging technology 1. Packaging design 2. Standardized labeling	Listening & Discussion	Yayu Darti Traditional Herbal Medicine Entrepreneur's House
IV	Accompaniment	Active participation in production activities	Yayu Darti Traditional Herbal Medicine Entrepreneur's House

The place where this research was carried out was in the neighborhood of Kaputihan Gang Paledang RT 001 RW 011 Majalengka Wetan, at the residence of Yayuk Darti, a traditional herbal medicine businessman who has been running since 1984. The time of the research was carried out from March 2022 to May 2022.

Alternative products and evaluations are in accordance with the conditions in the field as well as the technical and technological capabilities of the target UKM. The joint learning process is carried out through 5 meetings which can be carried out in the PKK studio or a mutually agreed place with the material adjusted to the stages of the activity. The material for implementing the activities is presented in Table 1 above.

Number and method of taking subjects (survey)/materials and tools (laboratory)

The number and method of taking subjects (survey)/materials and tools (laboratory) are described sequentially in paragraphs.

Types and methods of data collection (survey)/research stages (laboratory)

The types and methods of data collection (survey)/research stages (laboratory) are described sequentially in paragraphs.

Processing and data analysis

Data processing and analysis are described sequentially in the form of paragraphs.

In the method section, the author describes clearly and concisely the methods used to achieve the objectives that have been proclaimed in research activities. This section must contain the target audience, location of activities, methods used, evaluation of activities, material for activities. This section also contains complete information for readers if they want to do the same. The material used must be explained in its origin and quantity. The workings and data analysis must be written in a clear and concise manner. The research results must be measurable and the authors are asked to explain the measuring tools used, both descriptively and qualitatively. Explain how to measure the level of achievement of the success of research activities. (Tahoma, 10pt, 1.15 spacing).

Results and Discussion

The processing technology for making herbal medicine, although simple, must still refer to a good and correct processing process. This must be done in order to create herbal products with standardized quality. At the small and medium-scale industrial level, the handling of special food products uses materials that contain high bioactive compounds. Of course this requires a fairly large investment.

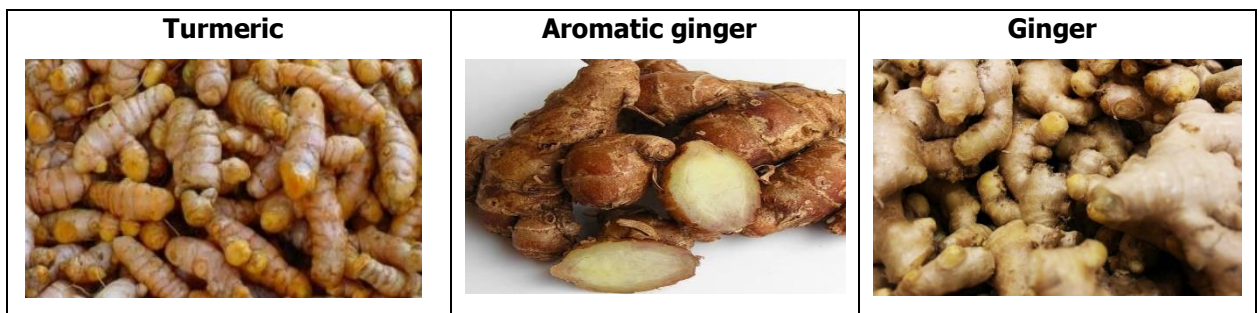
Sour turmeric drink can serve as a functional drink. Turmeric is a spice that can be used as a basic ingredient for making health drinks or functional drinks. According to Olivia et al. (2006), turmeric rhizome (*Curcuma domestica* Val.) is useful as an analgesic, anti-inflammatory, antioxidant, antimicrobial, cancer prevention, anti-tumor, lowering blood fat and cholesterol levels, as well as a blood purifier. The nature of turmeric's bioactive compounds that can function as antioxidants and antimicrobials is usually greatly affected by environmental conditions such as pH, temperature and oxygen. This results in products containing bioactive compounds usually having a low shelf life.

On the other hand, as a commercial product, a product with a long shelf life is needed to expand market share which is ultimately expected to increase the income of business actors.

Field identification shows that Yayuk Darti's traditional herbal medicine business partner scale is household scale. This business still uses technology, simple equipment and is not based on good processing. So that the quality of the resulting product is not standardized and has a short shelf life. As a food product, the safety of the product until it is ready for consumption must receive special attention.

Processing of turmeric into herbal medicine through the process of sorting, washing, grating, boiling, filtering and packaging. From the product specifications, the average shelf life of the product is only 2 days at room temperature and 4 days at refrigerator temperature. There is a bitter taste to the product. As an alternative to overcome this problem, it is deemed necessary to blanch the raw materials for 15 minutes. This is done to stop the damage caused by the enzymatic reaction and soften the cell tissue so that more curcumin and the bioactive compounds in turmeric can be extracted. However, for the process of making herbal medicine at UKM Yayuk Darti, the blanching process is carried out by drying the raw materials of turmeric, kencur and ginger that have been sorted until completely dry, then mashed using a blender. This is done as an effort to preserve raw materials and prevent the proliferation of microbes that cause cell damage from turmeric, kencur and ginger.

Here is a photo of the main raw materials for making herbal medicine:



Complementary Raw Materials:

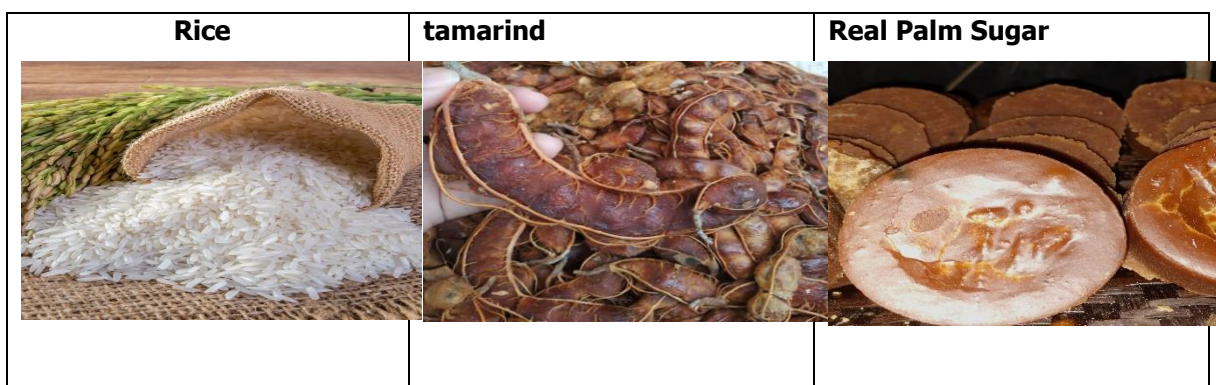


Figure 1 Ingredients for traditional herbal medicine

Sterilization of the final product also needs to be done so that the final product is protected from contaminant microorganisms that enter during filling. Simple sterilization is done by boiling packaged herbal products in boiling water for 5 minutes. 5 minutes is considered sufficient to kill contaminant microorganisms while also maintaining an attractive packaging shape. In this

effort, it was found that there was a storage problem. The finished herbs are only stored in open spaces so that the shelf life of herbs is not long. Therefore, it is recommended to be stored in a special refrigerator for the resulting product.

The herbal products produced are only packaged in 600 ml bottles which are less efficient in consuming these herbs. This problem was overcome by variations of product packaging in the form of sterilized aseptic glass bottles with a size of 250 ml which are easy to carry and for one drink and also technology transfer in the form of cup sealers and glasses of various sizes so that they can adjust to consumer demand. So far, the herbal medicine marketed does not have a label so that consumers do not know the name of the Yayuk Darti product. This problem was overcome by making brand labels on herbal medicine packaging. The label on the packaging is expected to be able to introduce Yayuk Darti herbal products to consumers.



Figure 2. Yayuk Darti's Jamu Packaging Label

To determine the level of success of this research program, at the beginning and end of the activity, pre-test and post-test were carried out to determine the response and attitude changes of the participants. The results are presented in the following graph:

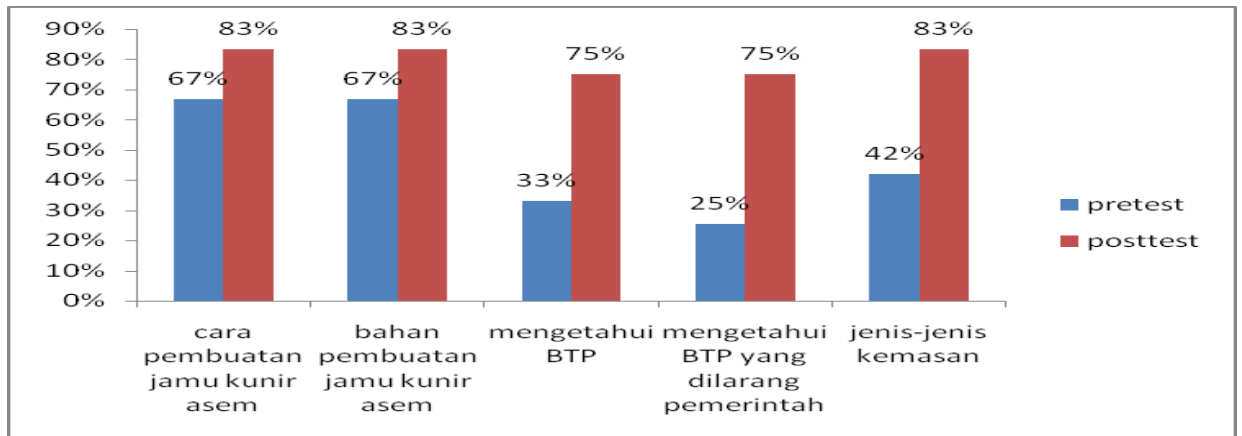


Figure 3. Pre-test and Post-test Results of Research Activity Participants

From Figure 3, it can be seen that the majority of respondents initially did not know the meaning of food grade packaging and prohibited food additives. Whereas packaging intended for food products has its own requirements, namely it does not allow material transfer to occur both from product to packaging and vice versa (Olivia et.al, 2006). The most important properties of packaging include gas and water vapor permeability and the surface area of the packaging. Packaging with good gas resistance and smaller surface area causes the product to have a longer shelf life (Liljebeg et al., 1999). Assistance carried out for 3 months after all transfers of tools and technology was carried out showed an increase in herbal medicine turnover by 20%. This is because business actors are able to expand market share so that monthly turnover increases.



Figure 4 Aseptic Packaging Delivery

Conclusion

The conclusions of this activity are:

1. Research activities are carried out in order to improve the quality of Yayuk Darti's traditional herbal medicine products in Majalengka District, especially from the aspect of product safety and packaging.
2. Recommendations that can be given to improve the quality of Yayuk Darti's traditional herbal medicine products are blanching for 15 minutes, sterilizing the final product for 5 minutes, the type of packaging and storage at 28° C can extend the shelf life of the product from 1 day to 7 days and even up to 14 days. up to one month when stored in the refrigerator at 16° C.
3. The activity received a fairly positive response from the community and business partners, so that a follow-up was necessary.

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