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Khaliya Onomiyea: Jurnal Abdimas Nusantara menerima artikel bidang pengabdian masyarakat khususnya penerapan ilmu pengetahuan dan teknologi berupa implementasi, penyuluhan dan sosialisasi konsep, model/prototipe, dan alat yang merupakan hasil pelaksanaan kegiatan pengabdian kepada masyarakat.

Processed Red Ginger *(Zingiber Officinale Var Rubrum)* into Instant Ginger as a Healthy Drink

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Abstract

Processed ginger used to be limited as a spice but has now become a health drink. The purpose of this scientific work is to determine the process of making instant ginger with the basic ingredients of red ginger (*Zingiber officinale*). The method used is qualitative through library research. Data collection techniques through field observations. Literature research and the practice of making instant ginger. This paper provides research information on the health effects of red ginger immunity. The process of processing red ginger becomes instant in a simple way that can be done in the home industry. This instant ginger drink can help increase immunity for Covid-19 survivors and also maintain body health.

Abstrak

Olahan jahe yang dulunya hanya sebatas bumbu, kini sudah menjadi minuman kesehatan. Tujuan penelitian ini adalah untuk mengetahui proses pembuatan jahe instan dengan bahan dasar jahe merah (Zingiber officinale). Metode yang digunakan adalah kualitatif melalui studi kepustakaan. Teknik pengumpulan data melalui observasi lapangan. Penelitian literatur dan praktek pembuatan jahe instan. Penelitian ini memberikan informasi penelitian tentang efek kesehatan dari kekebalan jahe merah. Proses pengolahan jahe merah menjadi instan dengan cara sederhana yang bisa dilakukan di industri rumahan. Minuman jahe instan ini dapat membantu meningkatkan imunitas bagi penyintas Covid-19 dan juga menjaga kesehatan tubuh.

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1. Introduction

Processed ginger products went viral when the Covid-19 pandemic broke out in Indonesia. Previously processed ginger was only limited to processed dishes as a spice in cooking. Now it has become an immunity drink product to help the body's resistance to disease. Several studies have shown that some local products can be used to improve the community's economy. For example, brown rice is a healthy food [1] and potatoes for ice cream.[2] In addition, there are local food processing innovations during the covid-19 pandemic.[3] Another innovation that can be done is processing spices that are rich in benefits. One of the spices as a local product that has economic potential is red ginger.

Indonesia is a country that has the potential of red ginger that needs to be utilized optimally. Therefore, it is necessary to empower the community to optimize

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the use of red ginger.[4] Herbal plants are potentials that the community can maximize. Red ginger is an agricultural product produced by traditional and modern agriculture. In some areas, red ginger is a community agricultural product that has economic potential. These agricultural products then have further economic potential by processing ginger into crystal extracts. Red ginger processing has absorbed labor from the surrounding community. This ginger processing has encouraged the absorption of community agricultural products. In addition, the processing process involves the surrounding community. This then results in the absorption of labor from the surrounding community.

Ginger powder is sold in packaged form or included in the production of other traditional beverage ingredients, such as *wedang uwuh*. The results of the two micro-businesses are marketed in supermarkets and souvenir shops typical of Semarang. Marketing through gift shops has also encouraged people's economic movements because people's behaviour is more interested in buying these products at gift shops than supermarkets.

Almotayri's research shows that herbs and spices, with their anti-inflammatory and antioxidant properties, have the potential for weight loss and related parameters.[5] While Azeez and Lunghar revealed that the herbs and spices turmeric (*Curcuma longa*) and ginger (*Zingiber officinale*) play an essential role in helping to heal inflammatory conditions.[6] Red ginger is a herbal plant containing essential oils, with a harvest period of 10-12 months and has high economic value [7] In 2016 research data, exports of red ginger rhizomes increased by 20-22% and could not be fulfilled by red ginger producers in Indonesia.[8] This shows that red ginger has economic potential.

2. Methods

The methodology of this research is qualitative research. The data collection technique is a literature review [9], [10] which includes searching national and international journals about red ginger and its research results. Interview to get information about the procedure of making instant red ginger. The processing costs and processing costs are presented in the research procedure, along with the processing costs will be shown in the research results. [1] The literature review will discuss the benefits of red ginger, red ginger research, procedures for making instant ginger, processing costs and business benefits of processing instant ginger.

3. Result and Discussion

3.1. Benefit of Red Ginger

Red ginger is a herbal plant that has many benefits and has been used traditionally. Traditionally in Asian countries, ginger is used as a cooking spice, drink and herbal medicine.[11]

Several modern studies show that red ginger has health benefits:

1. Lowers blood pressure, prevents blood vessel clots, lowers sugar levels in people with type 2 diabetes.[11], [12]
2. Helps digestion, makes the stomach comfortable, relieves stomach cramps in women during menstruation, helps expel wind, and treats colds.[11]
3. Prevent nausea in motion sickness and nausea in pregnant women.[13]

4. Ginger contains antioxidants that help neutralize the damaging effects caused by free radicals in the body.[14]–[17]
5. Gingerol activity can help prevent pancreatic, breast, and ovarian cancer.[12] It helps improve brain function and treat Alzheimer's disease.[12] Oxidative stress in the brain can be managed/prevented by dietary intake of ginger varieties (red ginger rhizome and white ginger). [18]
6. Ginger can cure various diseases because ginger contains gingerol, which is a very strong anti-inflammatory and antioxidant.[12], [19] The rich benefits of ginger can be utilized economically by processing it into several products.

3.2. Research related to red ginger (Zingiber officinale var rubrum)

The processing of instant ginger in powder form can be stored longer with the addition of Arabic gum. The more gum arabic, the better protection against the stability of powdered bioactive compounds during storage. [20] This is to protect the bioactive compounds in red ginger. To get biomass of raw materials and functional red ginger rhizome. it is necessary to get enough sunlight to photosynthesize optimally. [21] Healthy foods and herbs can be used as a diet or complementary therapy to prevent infection and strengthen immunity. [22] Red ginger is the answer as a raw material for traditional and herbal drinks and healthy drinks. Efficacy of ginger rhizome is for treating inflammatory and respiratory diseases, which are common in smokers. [23] The effects of dietary ginger (*Zingiber officinale var rubrum*) on growth. Several immunological, biochemical, and gene expression parameters are associated with zebrafish growth, immunity, and antioxidant systems. And lysozyme activity was significantly higher in the 2% and 3% ginger-treated groups compared to control fish. [24] Red ginger is not only used for humans but also in fish, animals and plants.

3.3. Instant Ginger Making Process

Processing red ginger into crystals or instant ginger powder requires several red ginger grinders and crystallizers. In general, the ingredients for making ginger crystals are ginger rhizome, sugar, cinnamon bark, and water. While the tools needed are a ginger grinder, a heater for evaporation, and a filter to produce ginger crystals.

Figure 1. Red ginger before grinding and extracting

The manufacturing process consists of several stages. Referring to the exposure of Yulianto et al. [7], Mayasari & Apriliyanti [25], the process of making instant ginger powder is carried out in table 1.

Table 1. Instant Ginger Making Process

Steps	Description
Ginger grinding	At this stage, the ginger rhizome is ground by grinding it using a traditional grater or a grinding machine.
Extract	The results of the grated ginger rhizome are then squeezed so that the extract and pulp are separated. The extract will be processed into instant ginger, while the pulp can still be used as an ingredient of boiled ginger after drying.
Evaporation and crystallization	The ginger extract is then processed by evaporation by a heating process. In this process, it is necessary to add granulated sugar to improve the crystallization process. The heat level of the fire needs to be monitored so that the crystallization process goes well.
Milling	After evaporation, ginger crystals are produced. Ginger extract in the form of crystals is crushed into powder form.
sifting	The crushed ginger should be sieved to ensure that no large ginger crystals remain in the ginger powder. If there are still ginger crystals, you have to go back to the grinding process.
Packing	The finely ground ginger powder can then be packaged for sale.

Figure 2. Ginger Extract Crystallization Process

Figure 3. Crystallized ginger

Figure 4. Instant ginger powder that has been packaged in plastic

3.4. Initial capital costs

Initial costs are required in the manufacture of this product. The cost of purchasing production equipment is non-refundable because it will be used in subsequent production. In comparison, the material costs can be returned after marketing the product. The following is the estimated cost of tools and materials for instant ginger in Tables 2, 3, and 4.

Table 2. Types of supporting tools and prices

Type tools	Price (IDR)
Wok no. 13	30.000
Gas stove	80.000
Sutil	7.000
Gas Cylinder 3 kg*	130.000
Grater	7.000
Filter	7.000
Total	261.000

* Can be used repeatedly, at least seven stages of the process of use again.

Table 3. Types of material name and prices

Material name	Price (IDR)
Ginger 1 kg	25.000
Sugar 1 kg	11.000
Water 1 lt	-
Cinnamon 3 segments	500
Lemongrass 5 sticks	500
Total	37.000

Table 4. Product Design Costs

Name	Price (IDR)
Plastic 10x17 cm @ Rp 300 x 10	3.000
Label @ Rp 100 x 10	1.000
Total	4.000

3.5. Calculation of Long Scale Product Benefits

The initial capital for the production of instant ginger is Rp. 302,000, while the production from the above ingredients is 1.4 kg of instant ginger. 1.4 kg of instant ginger is then wrapped into 14 packs with the contents of each 100gr. The selling price of each pack is IDR 15,000. So, 14 x IDR 15,000 = IDR 210,000.

When compared between the initial capital with the production results, it appears that there is a loss. This is because there are additional costs for supporting equipment that is used in the long term. If the production is carried out on a larger scale, such as ten scales, 140 packs of instant ginger are obtained.

When viewed from the initial capital, there is a loss because it includes supporting equipment. The calculation is like this:

Initial income: Benefits - start-up capital (including supporting tools)

IDR 210,000 - IDR 302,000 = minus IDR 92,000.

Suppose you look at ten manufacturing length scales in the sense of 100 products produced. Support tools that are used repeatedly are no longer counted. This means that to make 14 packs of instant ginger. Consumables are needed, such as Ginger 1 kg, Sugar 1 kg, Water 1 liter, Cinnamon 3 segments, Lemongrass 5 sticks with a total price of IDR 37,000 plus a product design fee of IDR 4,000.

The profit obtained is Rp. 169,000 plus an initial capital of Rp. 41,000, which can be used to buy starting materials five times the required materials. That means it can produce as many as 70 packs of instant ginger. Calculation:

Production costs Rp. 41,000 x 5 = Rp. 205,000, the rest is Rp. 5,000. The profits obtained in the second stage are: (70 packs of instant ginger x Rp. 15,000) - (initial loss + capital to make 70 instant gingers in the second stage) = (70 x Rp. 15,000) - (Rp. 92,000 + (Rp. 41,000 x 5) = IDR 1,050,000 - IDR 297,000 = IDR 753,000 (second stage profit).

Instant ginger marketing can be done in two ways, namely sales through gift shops and online marketing. During the COVID-19 pandemic and the era of the industrial revolution 4.0, it is possible for widespread marketing to take place. The age of the industrial revolution with technology makes fast access in various fields.[26] Similar to that expressed by Rauf et al., [9] that with this opportunity, instant ginger sales can be carried out through the opening of online stores at seller online, and several other marketing media. Thus, the production of instant ginger can provide an opportunity for economic improvement in the lower middle class. Marketing access becomes open and allows production and sales to increase.

4. Conclusions

Instant red ginger is an innovation in processing local products with red ginger as the essential ingredient. Ginger drink can help increase immunity during the Covid-19 pandemic. This Health Drink is easy to make by the community, and the raw materials are affordable. Processing of this product is done by crystallization through evaporation and the addition of sugar. Instant ginger production can be an entrepreneurial product that improves the household economy. Production that can be carried out in the household allows the establishment of family-based entrepreneurship.

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Author Contributions

For this research, R.D. in the idea, writing, and coordinating all research processes; I.P.A.D. revised the manuscript, designed the experiments and analyzed the data responses and contributed to proofreading of this paper.

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The authors declare no conflict of interest.

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