

## Innovation in using pineapple peel waste, which is rich in benefits

Saktioto<sup>1\*</sup>, Juandi Muhammad<sup>1</sup>, Ari Sulisty Rini<sup>1</sup>, Febrian Saputra<sup>2</sup>, Wahdah<sup>2</sup>,  
Vanesya Zahrani Shapira<sup>3</sup>, Joyada Luo Putra Fau<sup>3</sup>, Bima Aulia Akmal<sup>3</sup>,  
Diyana Puspita Dewi<sup>4</sup>, Siti Umayatun<sup>4</sup>, Azlina Yasni<sup>4</sup>, Widdiya Permatasari<sup>5</sup>

<sup>1</sup>Department of Physics, Universitas Riau, Pekanbaru 28293, Indonesia

<sup>2</sup>Department of Chemistry, Universitas Riau, Pekanbaru 28293, Indonesia

<sup>3</sup>Department of Medicine, Universitas Riau, Pekanbaru 28133, Indonesia

<sup>4</sup>Department of Biology, Universitas Riau, Pekanbaru 28293, Indonesia

<sup>5</sup>Department of Accounting, Universitas Riau, Pekanbaru 28293, Indonesia

### ABSTRACT

Community service activities carried out in the West Labuhbaru Village environment are carried out to change the community's lifestyle to become a zero-waste lifestyle. Processing pineapple peels into a product that has a sale value is expected to increase the income of the people of West Labuhbaru Village and reduce household waste. This community service method is carried out using counseling and education methods about processing pineapple (*Ananas Comosus L.*) skin, which is good for body health and becomes a product that has sales value. JAMUNS (Jamu Kulit Nanas) is a product made from pineapple peel juice mixed with ginger to make it an herbal medicine with a warm pineapple taste when drunk. Besides being suitable for keeping the body warm, this product also has many benefits for the body, so both children and adults can drink it. This product has a selling value if it is produced and distributed in the community. In addition, pineapple skin does not become household waste because it has been processed properly.

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#### \* Corresponding Author

E-mail address: saktioto@lecturer.unri.ac.id

## 1. INTRODUCTION

A wide variety of medical plants are found in Indonesia, many of which are developed from the hundreds or even thousands of medicinal plants that have been found there. One of the native plants that can only be found in the West Labuhbaru Subdistrict, Pekanbaru, Riau, is the pineapple plant. The pineapple (*Ananas Comosus L.*) plant grows best in tropical and subtropical climates. Additionally, pineapples are loaded with health benefits [1-4].

Pineapple is one of the most consumed fruits (see Figure 1), whether it is consumed raw or cooked. Normally, it takes pineapples 120 to 170 days after they bloom to reach maturity [5, 6]. Vitamins B6, B1, vitamin C and folic acid are among the nutrients found in pineapple. The capacity of sugar to function as an antioxidant and combat free radicals is fairly strong. Free radicals are highly reactive and inherently unstable; as a result, they frequently interact with other molecules to become stable. High-reactive radicals can initiate a chain reaction in a single formation, resulting in the synthesis of aberrant chemicals and a chain reaction that can harm vital human cells [7-10].

One of Pekanbaru City's subdistricts is West Labuhbaru Subdistrict. Because the kind of peat soil in the West Labuhbaru subdistrict is excellent for growing pineapple plants, it is one of the subdistricts with promise for agriculture. One kind of plant that can tolerate high acidity levels well is the pineapple plant, which prefers a pH of 3 to 4. In the physiography of basins or swamps, organic material decomposes into soil to generate peat. The buildup of organic matter in anaerobic, water-

saturated environments slows down the decomposition of organic matter. Peat soil is produced as a result of the organic material building up [11, 12]. The expansion of agriculture on peatlands has only recently occurred due to the need for food and plantation crop products, according to research on changes in the physical and chemical properties of peat soil as a result of peat land reclamation for agriculture. Tropical peatlands, particularly in Indonesia, have long been used as agricultural land by residents [13-16].



**Figure 1.** Pineapple fruit.

The flesh of the pineapple fruit, which may be used to make juice, jam, salad dressing, and syrup, is typically the only part of the fruit that is used. Fruit skin, which is typically simply thrown away or used as animal feed, is the portion of the fruit that is discarded and has little purpose. Pineapple peel still has a high nutritional content, including 13.65% reduced sugar, 17.53% carbs, 81.72% water, 20.87% crude fiber, 4.41% protein, and other vitamins and minerals [17]. Due to its high carbohydrate and sugar content, it may also be converted into ethanol or other fermentable food components, which have useful applications. Until it becomes household garbage, pineapple peel is often merely thrown away without any additional processing. To build a clean and healthy environment in line with the vision and objectives of the subdistrict, this needs to be taken into consideration, especially by the residents of West Labuhbaru Subdistrict [18]. Additionally, the 2023 University of Riau Integrated KKN students are working on projects that complement local initiatives. Normally, discarded pineapple peel may be used as a marketing factor. By proposing ideas connected to using pineapple peels to establish a zero-trash lifestyle, the 2023 University of Riau Integrated KKN students demonstrate their awareness of their position as future drivers who must be present in society addressing home trash management.

A concept known as "zero waste" or "waste-free" encourages us to utilize single-use items more carefully to lessen the amount and unfavorable effects of garbage. The aim is to prevent garbage from going to landfills, safeguard resources, and protect the environment. Please be aware that living a zero-waste lifestyle does not entail making plastic, single-use goods, and similar items illegal. The zero-waste idea is more about exercising self-control to stop being wasteful and to take responsibility for the environment. People who live this way of life are more conscious of their consumption, purchases, and how they affect the environment [19].

The community of West Labuhbaru Subdistrict conducted extensive outreach on processing pineapple peel and educating PKK women about the introduction of garbage to raise public interest in leading a clean, healthy, and waste-free life. Children from Kindergarten Aisyiyah VII Pekanbaru and SDN 148 Pekanbaru were also socialized about PHBS to teach them how to wash their hands with running water and soap, use clean water facilities, refrain from smoking in school settings, engage in regular physical activity, eradicate mosquito larvae to reduce mosquitoes, measure body weight and height, dispose of trash properly, and eat healthy food [20]. Therefore, the 2023 University of Riau Integrated KKN Students created this journal to spread knowledge about living a zero-waste lifestyle, innovative ways to reuse pineapple peels that would otherwise end up in household waste, and other community service projects to improve public health in the West Labuhbaru Subdistrict. It is believed that through participating in this activity, readers and the community, particularly the West Labuhbaru Subdistrict, can gain more understanding and information.

## 2. IMPLEMENTATION METHOD

To provide community service, pineapple skin (*Ananas Comosus L.*), which is beneficial to human health and may be processed into a product with economic value, is being counseled and educated on. Students at Riau University are the targets of community service. Leaflets were the equipment and supplies utilized throughout the service. Community service projects centered around the processing of pineapple skin (*Ananas Comosus L.*), which improves physical health and yields a marketable commodity. Activity was conducted on the second floor of the West Labuhbaru subdistrict office in West Labuhbaru Subdistrict, Pekanbaru City. Students from Riau University participate in community service. To complete this community service, the first thing to be done was to research the substances found in pineapple skin and how to use them. It is known that pineapple skin still contains a significant amount of nutrients, including 17.53% carbs, 81.72% water, 20.87% crude fiber, 4.41% protein, and 13.65% reduced sugar, in addition to other vitamins and minerals. This information was gathered from both national and international research publications. The pineapple skin was then tested to create a product with commercial value, which resulted in the creation of JAMUNS (Jamu Kulit Nanas). The following phase was teaching PKK women in the West Labuhbaru Subdistrict how to create JAMUNS and discussing the advantages of this product. PKK moms were socialized on the introduction of garbage, while students from Kindergarten Aisyiyah VII Pekanbaru and SDN 148 Pekanbaru were socialized on the implementation of a zero-waste lifestyle by PHBS.

## 3. RESULTS AND DISCUSSION

A product called JAMUNS (Jamu Kulit Nanas) is made from pineapple skin juice that has been combined with ginger to create an herbal medication that has a warm pineapple flavor when consumed. This product provides several health advantages for the body in addition to being appropriate for keeping the body warm, making it acceptable for consumption by both children and adults. This product can support immunity, relieve pain, stimulate hunger, lessen discomfort, and be a source of antioxidants. Antioxidants can prevent lipid peroxidation processes, thus the term "preventive antioxidants," although the enzymes Superoxide Dismutase (SOD), Glutathione Peroxidase, and Catalase are responsible for the mechanism of action. As long as the antioxidants perform their intended purpose, metal binders, singlet oxidant reducers, and reaction-breaker antioxidants can all react. Several studies also report that pineapple is a source of antioxidants containing various phytochemical phenolic and flavonoid compounds. Antioxidants work by capturing free radicals, so they can inhibit the proliferation of cancer cells and become anticancer agents. This product has sales value if it is produced and distributed in society. Apart from that, pineapple skin does not become household waste because it has been processed properly.



**Figure 2.** JAMUNS products.

## 4. CONCLUSION

It is envisaged that community service projects conducted in West Labuhbaru Village would shift the neighborhood's way of life to a zero-waste lifestyle. It is possible to raise the income of the residents of the West Labuhbaru Subdistrict and decrease household trash by turning pineapple skin into a product with commercial value. Executing the suggestions of the work program that has been implemented is a difficulty in and of itself due to the lack of public interest in trash processing.

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