

Soya Zalacca (SOCA) Healthy Drink Rich in Iron and Vitamin C as a Drink for Pregnant WomenIra Muslina^{1*}, Nurul Aini Suria Saputri¹, Nur Cahya Rachmawati¹, Zulya Erda²¹ Midwifery Department of Poltekkes Kemenkes Tanjungpinang, Indonesia² Environmental Health Department of Poltekkes Kemenkes Tanjungpinang, Indonesia

ABSTRACT

Many people in Riau Islands do not eat vegetables, causing many of them to suffer from anemia. The high number of marine resources such as fish and shellfish has made Riau Island people forget the importance of consuming these fruits and vegetables. Pregnant women in Riau Islands Province have the habit of consuming certain drinks every day, such as soya/tofu water. Tofu water is a processed drink made from soybeans contains high of iron. This research was conducted to produce SOCA healthy drinks for pregnant women. This research was carried out in July-August 2020, in the Integrated Chemistry Laboratory at the Poltekkes of The Ministry of Health Tanjungpinang with panelists from the Poltekkes of The Ministry of Health Tanjungpinang students. The result was the best formulation from the organoleptic test on students who were tested on pregnant women who lived around the Poltekkes Kemenkes Tanjungpinang environment. Then the preference test was carried out to determine which flavor was the best. This product was produced in 3 stages, namely, separating the essence of Salak Sari Intan, combining tofu water and Salak Sari Intan essence, and testing the preference for the product. The distinctive aroma of tofu water and Salak Sari Intan essence was mixed in this SOCA drink. It made the aroma of the drink its characteristic. The panelists also liked the color of the solution because the resulting color looked brighter than other solutions. SOCA drink is a very suitable drink as an alternative to prevent anemia.

Keywords: SOCA; soya; *Salacca zalacca*; iron; pregnant women

***Correspondence Author:**

Ira Muslina

Midwifery Department of Poltekkes Kemenkes Tanjungpinang

Arief Rahman Hakim Street No. 1, Tanjungpinang, Riau Islands, Indonesia

Email : iramuslina8@gmail.com**1. INTRODUCTION**

The prevalence of iron deficiency anemia in Indonesia is high. Based on the results of the 2018 Basic Health Research (RISKESDAS), almost half or 48.9% of pregnant women in Indonesia suffer from anemia. In 2018, the research stated that as many as 2 out of 3 pregnant women have not taken iron supplements, and the lack of access to nutritious food for pregnant women due to the nutritious food tends to be more expensive, is the cause of 1 of 3 pregnant women suffer from anemia [1]. According to data from the Ministry of Health, Research and Development in 2015, about 16.6% of the people of the Riau Islands Province (Kepri) suffer from iron deficiency anemia. This is because 96.6% of the total people in Riau Islands Province do not consume fruits and vegetables. [2]

Anemia is a condition of lack of red blood cells (erythrocytes), generally as a result of iron deficiency from food consumption or excessive blood loss and cannot be replaced from food consumption. Iron deficiency anemia is one of the most common anemias suffered by pregnant women. This condition can increase the risk of mothers

PROCEEDING
The 8th International Conference on Health Science

being susceptible to infection, miscarriage, giving birth to babies with low birth weight (LBW), increasing the risk of babies being born prematurely and can even be a cause of maternal death during childbirth. The need for iron that is still lacking in pregnant women is met by additional intake in the form of Fe tablets and iron sources foods and drinks[3]. However, most iron deficiency anemias are caused by inadequate iron intake and low availability of iron sources.

There is one unique thing about the food consumption habits of pregnant women in the Riau Islands Province. Pregnant women in Riau Islands Province have a habit of consuming certain drinks every day, namely tofu water. Tofu water is a drink made from soybeans, which is high in iron and available and commonly consumed by the people in Riau Islands Province. Tofu water mixed with sugar is often sold in the morning by cake sellers. Meanwhile, tofu water without sugar or original is sold by tofu producers in the afternoon until the evening at an affordable price. This large amount of tofu water production is supported by the latest data from the Central Bureau of Statistics (BPS) of Tanjungpinang, which states that there are 40 tempe and tofu craftsmen on Bintan Island (Bintan Regency and Tanjungpinang City) in 2018. It can be assumed that there are 40 water tofu producers on Bintan Island, not including other islands in the Riau Islands Province.

The myth circulating among the people of Riau Islands Province is that consuming tofu water every day during pregnancy will make mothers give birth to babies who have white and clean skin. Starting from this myth, pregnant women in Riau Islands Province have actually consumed a source of iron. The iron content in 100 grams of soybeans according to the 2019 Indonesian Food Composition Table is 6.9 mg. The high iron content in soybeans can be an alternative food to prevent anemia in pregnant women. This is certainly one solution to the lack of affordable iron sources in the Riau Islands Province. The hidden secret of tofu water still has to be processed further so it can become healthy food so it provides great benefits for pregnant women who consume it. Therefore, the researcher is interested in processing tofu water into a healthy drink that is rich in iron and combines it with salak Sari Intan as a catalyst which contains vitamin C and a natural sweetness additive[4].

Salak Sari Intan is a New Superior Variety (VUB) by the Agricultural Research and Development Agency (Litbang) which was launched in 2009 and 2010. This variety was developed in Bintan Regency, Riau Islands Province. Salak has advantages compared to other salak, it has a sweet flavor (TSS: 19 – 21 oBrix) and is not astringent, the aroma of this salak fruit is fragrant, the flesh is thick (0.3 – 1.3 cm), and has high levels of vitamin C, ranging from 31.88 – 85.42 mg/100g and the shelf life is quite long, from 10 to 14 days [5][6].

The low habit of people in Riau Islands Province in consuming fruits and vegetables is quite concerning in dealing with anemia, in accordance with the high nutritional content of fruits and vegetables. One alternative to overcome this is to create new innovations related to people's consumption habits and local commodities in the Riau Islands Province. Consuming SOCA drinks can be an option. SOCA drink which stands for Soya and Salacca zalacca is a drink from a combination of tofu water which is routinely consumed by pregnant women in the Riau Islands Province, and the essence of Salak Sari Intan which is a plantation commodity in Riau Islands and developed in Bintan Regency. With the high iron content in tofu water, vitamin C content and sweet flavor in Salak Sari Intan, it is expected that it can become an alternative healthy food that rich in iron and is easily obtained, commonly consumed and affordable to prevent

anemia in pregnant women in the Riau Islands Province. Of course, with an accepted taste and liked by pregnant women.

2. MATERIAL AND METHOD

The type of this study was an experimental design with a pre-experimental approach with laboratory standards. This research was carried out from July to August 2020. The place was at the Integrated Chemistry Laboratory of the Poltekkes Kemenkes Tanjungpinang. The raw materials used were tofu water and the essence of Salak Sari Intan. Other supporting ingredients were sugar and mineral water. The tools used were: blender, digital balance, beaker glass, spoon, knife, cutting board, container/basin, strainer, stirrer. Panelists in this research were students of Poltekkes Kemenkes Tanjungpinang. Furthermore, from the best formulation result of organoleptic tests on students, it was tested on pregnant women (trimester II) who lived around the Poltekkes Kemenkes Tanjungpinang environment. Stages of product manufacturing was making Salak Sari Intan essence; SOCA healthy drink manufacturing; and SOCA product preference test for healthy drinks with the hedonic test method.

Table 1 Experimental Design of SOCA Drinks

Concentration of Tofu Water	0.5%	1%	1%
Concentration of Salak Sari Intan essence	1%	1%	0.5%
Product Code	F1	F2	F3

The product manufacture began with mashing the meat of Salak Sari Intan and then manufacturing between the essences of Salak Sari Intan. The flow chart for manufacturing the Salak Sari Intan essence can be seen in Figures 1 and 2 below.

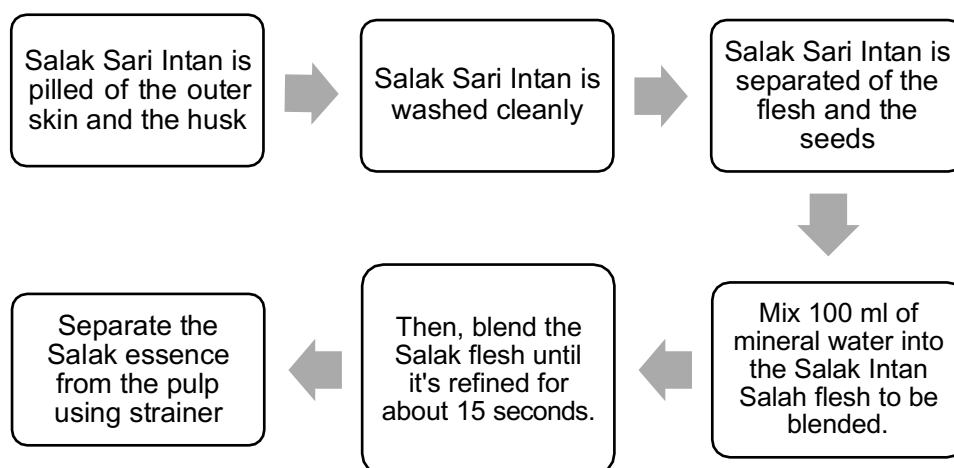


Figure 1 Flowchart of the Separation of Salak Sari Intan Essence

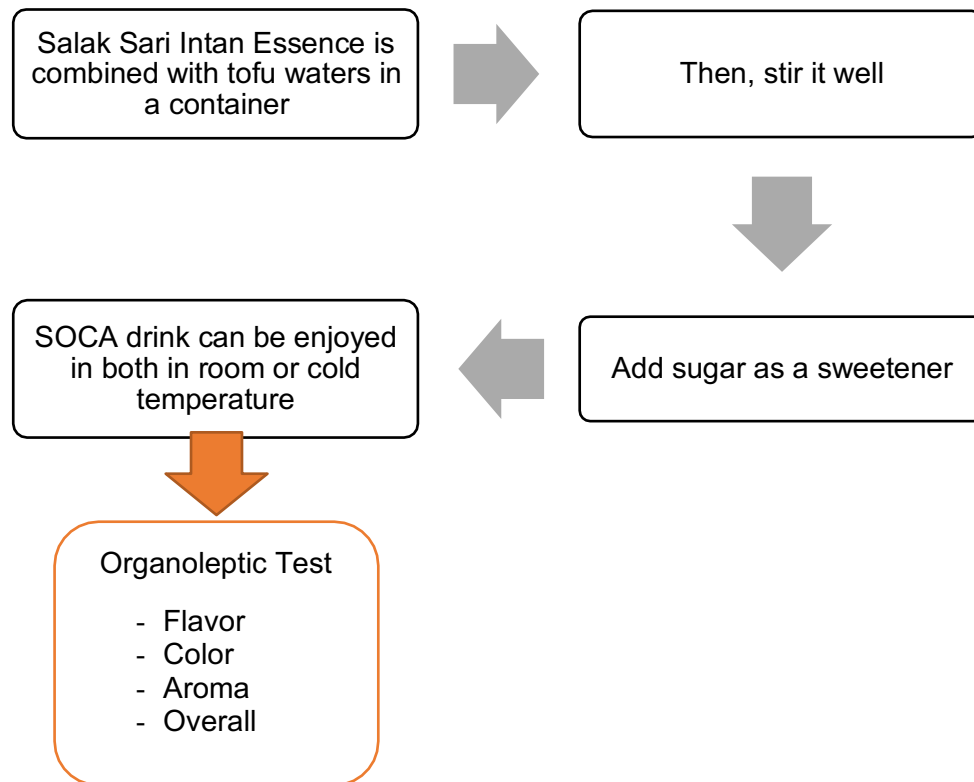


Figure 2 Flowchart of SOCA Drinks Manufacturing

Furthermore, after got the Salak Sari Intan essence, a trial was carried out by combining tofu water into it. To add flavor, add a little sugar about 1 gram of sugar per 50 ml of SOCA drink. Then a preference test was carried out to determine the best flavor.

3. RESULTS AND DISCUSSION

This product was named SOCA Drink which was an acronym for Soya and *Salacca Zalacca*. This product was made in 3 stages; Separating the Salak Sari Intan essence, combining tofu water and the Salak Sari Intan essence, and testing the preference for the product.

The separation of pulp and essence of Salak Sari Intan was aimed to obtain water from the Salak Sari Intan essence which would later be combined with tofu water. The raw materials for making Salak Sari Intan essence were Salak Sari Intan and mineral water. The manufacturing process began with peeling the outer skin and the husk of the salak fruit and then washing the fresh salak fruit with the aim of removing dirt of residual pesticides, dust, soil or caterpillars, then drained, then dried by aerating, then smoothing using a blender and filtered using a 100 mesh sieve to separate the pulp and water from the Salak Sari Intan essence.

The process of combining tofu water and Salak Sari Intan essence was preparing 100 ml of tofu water and 100 ml of Salak Sari Intan essence in different containers. Next, the tofu water was poured into the Salak Sari Intan essence and stirred until it mixed well.

Then a preference test was carried out with 5 panelists to assess the organoleptic characteristics (color, flavor, aroma, and overall) with a scale of 1 = dislike very much; 2 = dislike; 3 = neutral; 4 = likes; 5 = really like the SOCA drink formulas. The panelist test results can be seen in diagram 3.1.

SOCA drink is a drink made from the combination of tofu water and the Salak Sari Intan essence. The serving of SOCA drinks was the same as the serving of ready-to-drink packaged drinks in general. The SOCA drink was then tested for organoleptic characteristics (overall color, flavor, aroma) using 20 untrained panelists consisting of students and students of the Poltekkes Kemenkes Tanjungpinang and 20 pregnant women who lived around the Poltekkes Kemenkes Tanjungpinang. Assessment was carried out by assessing the product and giving a score of 1 = very dislike; 2 = dislike; 3 = neutral/normal; 4 = likes; 5 = really like. The SOCA drinks tested were F1, F2, and F3 respectively, namely SOCA drinks with 0.5% tofu water and 1% Salak Sari Intan essence, 1% tofu water and 1% Salak Sari Intan essence, and tofu water 1% and the Salak Sari Intan essence 0.5%. In the color preference test, on average, the panelists liked the F3 and F2 samples with 4 points. Overall, both in color, flavor and aroma, the 20 panelists liked the F3 sample with a score of 4 points.

The color produced by SOCA drinks was white like milk in general. Because the basic color of tofu was more dominant than the Salak Sari Intan essence. The SOCA drink has a distinctive flavor that came from the Salak Sari Intan essence. This distinctive taste was also to add vitamin C, because vitamin C can help maximize Fe absorption in humans. The flavor produced by SOCA drinks was sweet and slightly sour, typical of salak fruit. The panelists did not feel the bitter or unpleasant flavor. The higher the concentration of Salak Sari Intan essence, the higher the sour flavor produced. The concentration that panelists prefer was a solution of F3 which provided the right flavor between sweet and sour. The distinctive aroma of tofu water and the Salak Sari Intan essence combined in this SOCA drink. This made the aroma of this drink has its own characteristics. If the drink was stored in the refrigerator, its distinctive aroma would long lasting. Making this drink can be enjoyed by its aroma either at room or cold temperature. Overall, from the data above, it could be seen that the panelists liked the aroma of the F3 sample which contained 0.5% concentration of Salak Sari Intan essence and 1% concentration of tofu water. Overall, the SOCA drink favored by the panelists was the F3 sample which has the distinctive flavor of Salak Sari Intan and the aroma of tofu mixed into one. The panelists also liked the color of the solution because the resulting color was white which looked brighter than other solutions. SOCA drink was a very suitable drink as an alternative to prevent anemia. Many people in the Riau Islands did not eat vegetables, causing many of them suffered from anemia. The high level of marine resources such as fish, shellfish, and others made the people forgot the importance of consuming these fruits and vegetables. The targets to be achieved in the benefits of this product were pregnant women and women of childbearing age who were prone to anemia. Color and aroma become the main allure for consumers due to this drink has a color characteristic and distinctive aroma.

SOCA health drink products do not yet have laboratory test results for the precision content of vitamins C and Fe due to laboratory limitations in the Riau Island. The process of manufacturing Salak Sari Intan essence was not cooked, so the estimated shelf life of the product was only 1 day at room temperature. The reason for not doing the cooking

process was to minimize the loss of vitamin C content in salak Sari Intan which was susceptible to high temperatures or heat.

4. CONCLUSION

The best SOCA drink formulation is a formulation containing a concentration of 1% tofu water and 0.5% Salak Sari Intan essence. The best salak fruit to add to tofu water is Salak Sari Intan which is a local product of Bintan, Riau Islands and has a fairly high vitamin C content. For the limitations of analytical tools at the Poltekkes Kemenkes Tanjungpinang and Riau Islands Province, chemical analysis of Fe and vitamin C content cannot be carried out quickly.

5. ACKNOWLEDGEMENT

We would like to thank Poltekkes Kemenkes Tanjungpinang and PUI-PK Kemilau for facilitating this research.

REFERENCES

- [1] "Profil Kesehatan Kepri 2019.pdf," *Google Docs*. https://drive.google.com/file/d/1K2YE545SXULIfG-S8DN8OrMXqYxCWzB/view?usp=sharing&usp=embed_facebook (accessed May 18, 2022).
- [2] "Kementerian Kesehatan Republik Indonesia." <https://www.kemkes.go.id/-/article/print/18051600005/kenali-masalah-gizi-yang-ancam-remaja-indonesia.html> (accessed May 18, 2022).
- [3] World Health Organization, "Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity," World Health Organization, WHO/NMH/NHD/MNM/11.1, 2011. Accessed: May 18, 2022. [Online]. Available: <https://apps.who.int/iris/handle/10665/85839>
- [4] M. Khaidir, "ANEMIA DEFISIENSI BESI," *J. Kesehat. Masy. Andalas*, vol. 2, no. 1, Art. no. 1, Sep. 2007, doi: 10.24893/jkma.v2i1.23.
- [5] "Salak Sari Intan, Potensi Ekspor dari Perbatasan," *Technology Indonesia*, Apr. 22, 2020. <http://technology-indonesia.com/pertanian-dan-pangan/inovasi-pertanian/salak-sari-intan-potensi-ekspor-dari-perbatasan/> (accessed May 18, 2022).
- [6] S. Hadiati, A. Susiloadi, and T. Budiyantri, "Perakitan Varietas Salak Sari Intan 48," *Bul. Plasma Nutfah*, vol. 18, no. 1, Art. no. 1, Oct. 2016, doi: 10.21082/blpn.v18n1.2012.p26-31.