

Applied Technology to Produce Chlorella Jelly Genki in Order to Increase Human Body Immunity from Covid-19 Illness

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Abstract: The Covid-19 was first confirmed in Indonesia on 2 March 2020. The pandemic has spread to 34 provinces in country with Jakarta, West Java, East Java and Riau being the worst hit. So far, Indonesia has 3,693,272,616 cases, the 6th highest in world behind America, India, Brasil, and Turkey. So it is very important to increase the human body immunity by absorbing CO₂, haze, dust, tiny particle, and Covid-19, and producing O₂ in the surrounding area and Chlorella powder as supplement food to prevent fatality of the human being. The Dahril Bottle is a place to culture *Chlorella* sp. in a closed room to absorb CO₂, haze, dust, tiny particle, COVID-19, and produce O₂ in the surrounding area and Chlorella powder that can be used as supplement food to increase the immunity of human body from COVID-19 illness. Based on the result of this study it is indicated that Chlorella with chlorophyll-a inside can grow well in the Dahril Bottle to absorb CO₂ and produce O₂ with a chemical reaction as follow, $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2\uparrow$. The high concentration of cell density was found 1.2×10^7 cells/mL, chlorophyll-a concentration of 184.09 µg/L, and Chlorella powder, 1.25 g/L, and CO₂ decreased from 18.36 mg/L to 1.24 mg/L or 93.34%, O₂ increased from 3.76 mg/L to 6.21 mg/L or 65.15%. The chemical compound of Chlorella powder was also high with a protein level of 45.09%, lipid 10.85%, and carbohydrate 12.77%. They also contain: vitamin E, mineral, beta-carotene, and antioxidant essence. Chlorella Jelly Genki that is made in this study can be used as a supplement food to increase the immunity of the human body to prevent Covid-19 illness.

Key words: Dahril Bottle, CO₂, O₂, Chlorella powder, COVID-19 illness.

1. Introduction

The COVID-19 pandemic is also known as the coronavirus pandemic, which is an ongoing pandemic of coronavirus diseases 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus-2 (SARS-2). The outbreak was first identified in Wuhan, China in early December 2019. The WHO (World Health Organization) declared the outbreak of a public health emergency of the international concern on 30 January 2020 and a pandemic on 11 March 2020. Based on the report by Johns Hopkins, University of

Medicine, on May 15 2021, more than 161.37 million cases of COVID-19 have been reported in over 197 countries and territories, consulting in more than 3.35 million deaths, and 158.02 million peoples have recovered [1].

The virus is primary spread between people during close contact. The droplets usually fall to the ground as onto surface rather than travelling through air over long distances. Less commonly people may also become infected by touching a contaminated surface and then touching their face [2].

The COVID-19 was first confirmed in Indonesia on 2 March 2020 [3]. The pandemic has spread to 34 provinces in country with Jakarta, West Java, and East

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Java being the worst hit. So far, Indonesia has 1,734,285 cases, the 6th highest in world behind American with 32.88 million cases, India 24.04 million cases, Brasil 15.43 million cases, France 5.90 million cases, and Turkey 5.09 million cases. In terms of death numbers, Indonesia ranks fifth in Asia with 47,823 deaths [4]. Its fatality rate is also one of highest in the world at around 7%. So it is very important to increase human body immunity by absorbing CO₂, haze, dust, tiny particle and COVID-19, and producing O₂ in surrounding area and Chlorella Jelly Genki as supplement food to prevent fatality of human being.

Dahril Bottle [5] and Cleo Bottle are used to culture microalgae, *Chlorella* sp. in closed room in order to absorb CO₂, haze, dust, tiny particle, COVID-19 and to produce O₂ in surrounding area and Chlorella Jelly Genki that can be used as supplement food to increase immunity of human body from COVID-19 illness. *Chlorella* sp. is a potential supplement food source for human being because it is high in protein and other essential nutrients when dried, it is about 45% protein, 20% fat, 20% carbohydrate, 5% fiber, and 10% minerals. It is also abundant in calories and vitamins. Chlorella is also suggested as an inexpensive protein supplement to animal diet. Under certain growing condition, Chlorella yields oils that are high in poly saturated fats.

2. Materials and Methods

Dahril Bottle and Cleo Bottles were two kinds of bottle that can be used as a place to culture Chlorella in a semi-closed room in this study. Dahril Bottle and Cleo bottle were made of plastic bottle completed by air pump to supply carbon dioxide, and filled with distilled water as a culture medium, and Dahril Solution as macro and micro nutrients, and the *Chlorella* sp. as a seed of micro algae [6].

The light came from sun light directly to supply energy for microalgae to photo synthesis by utilizing carbon dioxide (CO₂) and water (H₂O) which

produce carbohydrate (C₆H₁₂O₆) and oxygen free (O₂). In addition they are also able to take advantage of macro and micro nutrients dissolved in water as in-organic material which could be changed into organic matter in the form of protein, lipid, vitamins and minerals that are needed in the lives of humans as food supplement to increase immunity of human body [7].

The initial step in the use of Cleo bottle is by cleaning the bottle well and then rinsing with hot water (boiling), in order to kill bacteria and fungi. Then the bottles were filled with 3.5 L of distilled water with the capacity size of the bottle (6 L). The nutrients we use in this study were made by pure chemical composition that we call it Dahril Solution 1. The Dahril Solution 1 made by chemical fabricant namely, KNO₃, MgSO₄, K₂HPO₄, NaCl, CaCl₂ · 2H₂O, then Fe-solution, 1 mL/L and trace metal solution 1 mL/L. Fe solution made by FeSO₄ · 7H₂O and Na₂EDTA. Trace metal solutions made by H₃BO₃, MnSO₄ · 7H₂O, ZnSO₄ · 7H₂O, CuSO₄ · 5H₂O and Na₂MoO₄. All of these chemical substances can be purchased from the local stores. The concentration of this solution used in this study was 10% [8].

Into the water medium, we inoculated the seed of microalgae with initial density of 500 × 10³ cells/mL. After that, the bottle medium was ready to use in his studies. By connecting this air pump with an electric current, the air pump was functioning to supply CO₂ properly. Thus, the process of photosynthesis can take place continuously that will generate free oxygen, while absorbing carbon dioxide, haze, dust, tiny particle and also COVID-19 from the surrounding air [9-12].

3. Results and Discussions

3.1 Production of Chlorella Jelly

It was founded that *Chlorella* sp. can grow well in Dahril Solution with Dahril Bottle and Cleo Bottle as medium with many parameters as shown in Table 1.

Table 1 Many parameters after Chlorella culture in Dahril Bottle.

Item	Initial	At days 12	Increased	Reduced
Cell density (cell/ml)	500×10^3	1.5×10^7	1.5×10^7	
Chlorella as jelly wet (g/L)	0.50	15.28	14.78	
Chlorophyll-a ($\mu\text{g/L}$)	8.36	184.09	175.73	
CO ₂ (mg/L)	18.36	1.24		17.11 (91%)
O ₂ (mg/L)	3.76	6.21	2.45 (65 %)	
Nitrate reduced (mg/L)	15.43	1.46		13.97 (95%)
Phosphate reduced (mg/L)	45.82	4.98		48.84 (89%)
pH increased	7	8	1	

3.2 Materials and Process to Produce Chlorella Jelly Genki

3.2.1 Materials

Freshwater 6 L, the 3 paces, cremer 1 kg, sugar 2.3 kg, seaweed powder 3 paces, Chlorella jelly 50 g, sugar 300 g.

3.2.2 Process

Freshwater was boiled and 3 paces tea entered as long as 1 min in the boiled waters then filtered. After that, 1 kg cremer entered into the water and stirred. Then the water moved to another place and cooled for 1.5 h.

To make Chlorella Jelly: 1 L freshwater was boiled, 50 g Chlorella jelly entered and stirred then 300 g sugar and 3 pages of seaweed powder entered. After that, this water with Chlorella and seaweed powder was cooled until freeze. All freeze jelly was shelled to make smaller then fill into 50 cups in tea made before. After that, all cup water was covered with press tool to cover properly all of the Chlorella Jelly Genki as shown in Fig. 1. All processes to make Chlorella Jelly Genki can be shown on YouTube zFAyTAGe9NY.

3.3 Marketing Process

In order to sell this Chlorella Jelly Genki to the society in Pekanbaru, CV, Genki Indah Nusantara has been working together with gift shops in Pekanbaru city, such as:

(1) Araya Cake 2, Jln Kaharuddin Nasution, Simpang Tiga Bukit Raya, Pekanbaru, Riau.

(2) Jingga gift shop Riau, Depan Kantor Camat Jl Kaharudin Nsution No. 26 Simpang Tiga Kec. Bukit

Raya, Kota Pekanbaru, Riau.

(3) Mega Rasa Oleh-Oleh khas Pekanbaru, Jl Jenderal Sudiman No. 397 D Cinta Raja. Kec, Sail Kota Pekanbaru, Riau.

(4) Ummuza Brownes, Jl Tuanku Tambusai No. 16. Tangkerang Bar. Kec. Marpoyan Damai, Kota Pekanbaru, Riau.

(5) Dimas Shop Jl Tuanku Tambusai Labuh Baru Tim. Kec. Payung Sekaki. Kota Pekanbaru Riau.

(6) Pak Eky Shope Jl Tuanku Tambusai Labih Baru Tim Kec. Payung Sekaki, Kota Pekanbaru, Riau.

(7) Algae Laboratory, Kampus Bina Widya, Simpang Baru, Panam.

(8) CV Genki Indah Nusantara, Office, Jl. Pembangunan No. 3, Pekanbaru, Riau.



Fig. 1 The process to make Chlorella Jelly Genki in this study.

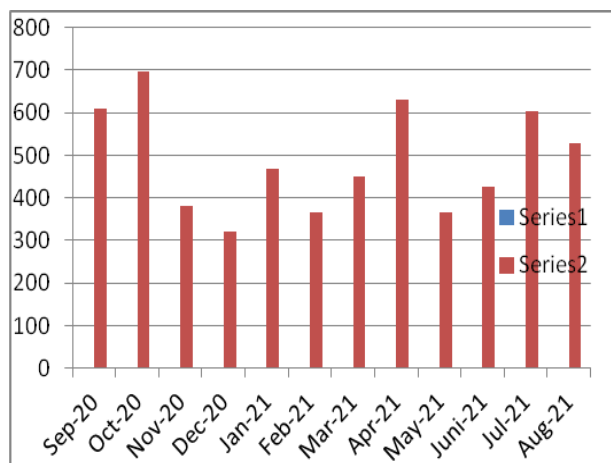


Fig. 2 Chlorella Jelly Genki was sold in Sep. 2020 to Aug. 2021.

As long as year 2020 and 2021, Chlorella Jelly Genki was sold out as much as shown in Fig. 2.

During a wet season in September 2020 to May 2021, COVID-19 illness has been a main problem of human being in the world, especially in Riau Province and also around Indonesia. Many people have been contaminated with virus no except me. Almost 14 days we have to be separated from the society in order to restrain spread of this injure virus [13]. During that time, we used two Dahril Bottles in isolation room to get fresh air and also to increase oxygen saturation in the bloods. The oxygen concentration in room was balanced. So the pH of human blood tended to be stable. It made human immunity tend to be increased. COVID-19 has been the most common acute illness of the people in this condition. Many people were ill, especially old man and woman that have been contaminated by COVID-19 causing heavy respiratory tract infection. Some of them died. In this situation we used Dahril Bottle to increase oxygen saturation in the blood of my body and used Chlorella Jelly Genki to promote the human body immunity for the people by producing and selling at local market. During these periods, Chlorella Jelly Genki has been sold as many as 4,291 cups in Pekanbaru city [14].

4. Conclusion

Based on this study, it can be concluded that

Chlorella biomass can be produced using Dahril Solution as culture media with protein contain being 45.09%, lipid 10.85%, and carbohydrate 12.77%. The chemical compounds of Chlorella Jelly Genki were also high with protein level of 45.09%, lipid 10.85% and carbohydrate 12.77%. They also contain, vitamin E, mineral, beta-carotene and anti-oxidant essence. Chlorella Jelly Genki that was made in this study can be used as supplement food to increase immunity of human body to prevent COVID-19 illness.

Acknowledgements

We wish to thank Departments of Research and Development Board, Ministry of Research, Technology and High Education, Research and Dedication to Society Board, University of Riau for kindly supporting this works. We also would like to thank Director of PT PTP 5, Chief of Palm Oil Industry, Sei Galuh and some of the our students with their dedication to supporting this study.

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