

THE EFFECT OF WATER CONCENTRATION ON VITAMIN C RESISTANCE AND ORGANOLEPTICAL VALUE OF *Aloe vera* CANDIED

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ABSTRACT

Aloe vera is a plant that is easy to grow in hot and open air areas like in Indonesia. One of the foods made from *Aloe vera* is candied. The purpose of this study was to determine the effect of lime concentration on vitamin C and organoleptic content of *Aloe vera*. This research was conducted in March 2017 in Laboratory of Biology and Chemistry, Faculty of Tarbiyah and Keguruan Universitas Islam Negeri Palembang. This research uses experimental method with Completely Randomized Design (RAL) with one factor that is the concentration of lime solution with four treatment levels such as K1 = 1%, K2 = 2%, K3 = 3% and K4 = 4% with 5 replications. The test included organoleptic test using hedonic method and vitamin C test using titration method. Measurements of vitamin C levels in the five samples of the highest wet *Aloe vera* were obtained at a 1% concentration of lime water on average of vitamin C of 323.84 mg / 100gr and the measurement of vitamin C content of the lowest wet *Aloe vera* was obtained at a concentration of 4% vitamin C 98.6 mg / 100gr. The organoleptic test of candied *Aloe vera* using 31 best value panels was obtained at concentrations of 1%, 2% and the lowest values obtained at control concentrations.

Keywords : *Aloe vera, vitamin C, organoleptik, manisan*

INTRODUCTION

Aloe vera is known for thousands of years. This plant is thought to have originated from Africa. Plants belonging to this class of Liliaceae have thick leaf meat, long shrink to the end, green, slimy, and easy to grow in hot and open air area, so this plant is easy to grow in Indonesia land (Sudarto, 1997). In ancient times *Aloe vera* plant is usually used as a fertilizer of hair, wound healers, skin nurses, and can cure other diseases (Sudarto, 1997). This plant has various physiological effects such as hypocholesterolemia, antioxidative, anticarcinogenic, dermatitis, antiviral, and antiinflammatory, and can modulate the immune system (Elizabeth, 2001). *Aloe vera* is not only good for health but *Aloe vera* has the potential to be functional food. *Aloe vera* does not only serve as food or drink, but has other healthful effects. These functional foods and beverages are made from plants that contain substances or compounds that are clinically proven to be beneficial to health (Furnawanthi, 2002).

One of the foods made from *Aloe vera* is candied. Candied is one form of processed food that many people love. It is sweet and mixed and the typical taste of the fruit is perfect to be enjoyed. Candied is one of the oldest method of preserving fruits and in the making using sugar or by soaking and heating the fruit in honey. The processing of anecah fruit into candied wet fruit or candied dried fruit still has a promising business opportunity and enough market absorption potential (Alliceva, 2010). Constraints faced in making *Aloe vera* candied is a soft and slimy *Aloe vera* texture. Therefore, it is necessary to immersion in a solution of lime or Ca (OH) 2. The use of lime solution in candied *Aloe vera* can reduce the occurrence of damage to the material. According Utami (2005) that the provision of lime aims to maintain the texture on *Aloe vera* can even improve the texture of a soft *Aloe vera*. Based on Pratiwi's (2013) study that the administration of lime solution on the manufacture of candied tamarillos with concentrations of 1% to 6% resulted in an appropriate degree of crispness at a concentration of 6%. Astuti et al. (2013) made rambutan candied with a concentration of 2%, 4% and 6% lime solution.

Based on research Hastuti, et al. (2013), vitamin C levels in dried rambutan candied using lime solution with a concentration of 2% is 1.789 mg / 5gr. Levels of vitamin C with lime concentrations of 4% and 6%

concentrations of 1.789 mg / 5gr and 1.44 mg / 5gr. Decrease in vitamin C levels is caused by soaking conditions with lime solution which causes the immersion conditions to become alkaline.

RESEARCH METHOD

This research was conducted in Laboratory of Biology and Chemistry, Fakultas Tarbiyah dan Keguruan UIN Raden Fatah Palembang. The study was conducted in March of 2016/2017. This research uses experimental method with Completely Randomized Design (RAL) with one factor that is concentration of lime solution. The treatment consisted of four levels, K1 = 1%, K2 = 2%, K3 = 3% and K4 = 4% with five replicates (25 units of trial). Vitamin C test using Iodimetry method and organoleptic test using hedonic motede. The data obtained were analyzed by ansira (ANOVA) from each treatment.

he qualitative vitamin C test of candied *Aloe vera* was then extracted into a test tube using a pipette of 5 drops, then added 15 drops of Benedict reagent and heated over low heat to boiling for 2 minutes. If the color changes to yellowish green to red brick indicates the presence of nutrients in the sample (Rahmawati et al., 2013).

The test of vitamin C quantitative candied *Aloe vera* was done by 100 gram blend finely and weighed in glass of chemical, then added aquades as much as 100 ml. The results of the blender are filtered using gauze to separate the fitratnya. Then a 5-ml filtrate was introduced into the erlemeyer, added 2 ml of starch and 5 ml of aquadest. Then titrated with 0.01 N iodine solution until formed blue color, then recorded the volume of titration of iodine. The organoleptic test according to Primary (2013) is done by sensory evaluation. This method is done by panelists. Panelists serve as a measuring tool. Therefore, panelist elections play an important role in obtaining accurate analysis results. This research uses consumer-like panelists consisting of 31 panelists who are in the same condition.

RESULT AND DISCUSSION

The influence of lime or Ca (OH) 2 concentration on vitamin C content and *Aloe vera* candied texture is presented in Table 1.

Table 1. Test Result of Vitamin C Content Qualitatively on Candied *Aloe vera*

No.	Sample	Color	Note
1.	Control	Yellow to orange to red brick	Positive
2.	Concentrate 1%	Yellow to orange to red brick	Positive
3.	Concentrate 2%	Yellow to orange to red brick	Positive
4.	Concentrate 3%	Yellow to orange to red brick	Positive
5.	Concentrate 4%	Yellow to orange to red brick	Positive

Note :

Positive : If the color is orange, yellow to red brick

Negative : If the color does not change and black

The results of this study showed that the highest levels of vitamin C in the treatment of 1% concentration of 323.84 mg / 100gr. The lowest levels of vitamin C in the 4% concentration treatment were 98.56 mg / 100gr (Table 1 and Table 2).

Table 2. The Data of Vitamin C Content Quantitatively on *Aloe vera* Candied

Treatment	Repeat					Total	Average (mg/100gr)
	1	2	3	4	5		
Control	281,6	246,6	246,6	246,6	211,2	1.232,6	246,52
Concentrate 1%	352	316,8	281,6	316,8	352	1619,2	323,84
Concentrate 2%	481,6	281,6	281,6	246,6	246,6	1338	267,6
Concentrate 3%	105,6	140,8	140,8	140,8	176	704	140,8
Concentrate 4%	70,4	140,8	105,6	105,6	70,4	492,8	98,56
						5.386,3	1077,32

The average yield of vitamin C content at *Aloe vera* was obtained in Table 2. Then we analyzed the pattern with five treatments and five replications. Based on the results of the analysis, the concentration of lime water has a very significant effect on vitamin C levels. It is shown in the value of $F_{count} 64,852 > F_{table} 2.67$ with 5% level and $F_{table} 4,43$ with level 1%, H_1 accepted which states there is influence on giving lime or Ca (OH) 2 water to vitamin C content, then H_0 is rejected which states there is no influence on the administration of Ca (OH) 2 lime water to candied *Aloe vera*. Furthermore, to know the difference of influence from each treatment conducted further test with different level 5% and 1%. Based on this, it is known that there is influence of lime water concentration on candied *Aloe vera*. The best value is obtained at 1% concentration because the influence of lime water concentration is significantly different or very real with the influence of all treatment concentration.

CONCLUSION

The highest concentration of Ca (OH) 2 lime water for vitamin C content of *Aloe vera* candied is concentration of 1% with average value 323,84 mg / 100gr. Lowest levels of vitamin C candied *Aloe vera* that is at a concentration of 4% with an average value of 98.56 mg / 100gr. Based on this, it is known that there is an effect of concentration of lime water on candied *Aloe vera*. The best value is obtained at 1% concentration because the influence of lime water concentration is significantly different or very significant with the influence of all other treatment concentrations.

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