Effervescent Tablet Formulation of dry Strawberry Fruit Extract (Fragariax ananassa) And Dry Aloe Vera (aloe vera (l.) webb.) Extract With Variations in Comparison of Citric Acid and Tartratic Acid as a source of acid

Ida Ningrumsari
Program Studi Teknologi Pangan, Fakultas Pertanian, Ma'soem University, Indonesia
Email : daningrumsari@gmail.com

ABSTRACT

Effervescent tablet manufacturing research aims to combine citric acid and tartric acid as a source of acid in an effort to obtain the most optimal concentration in the formula and can practically be consumed in the form of effervescent tablets. Randomized Group Design (RAK) with one variable, namely the ratio of citric acid (1.91%, 1.95%, 1.99%) and tartaric acid (23.59%, 23.55%, 23.51%). The results showed that the ratio of citric acid and tartric acid affects the water content, vitamin C, total dissolved solids, hardness, soluble time, uniformity of weight, color, and taste of effervescent tablets dry strawberry fruit extract and dried aloe vera extract. The best treatment was an a3b3 sample with a moisture content of 2.73%, vitamin C content of 497.26 grams, total dissolved solids of 7.30 brix, hardness of 5.47 kg/cm3, a soluble time of 3.34 minutes, a weight uniformity coefficient of variance (CV) 4.74%, a color of 2.01, and a taste of 2.06. Antioxidant results show a ratio of citric acid 1.99% and tartric acid 23.51% resulting in active antioxidant activity of 82,78 ppm.

Keywords : strawberry extract, aloe vera extract, effervescent tablets, citric acid, tartric acid

INTRODUCTION

Effervescent tablets are a practical product because they are easy to consume, dissolve quickly in water without having to stir, give a sparkle effect like soda and have a longer shelf life (Pribadi et al., 2014). In the food sector, the development of effervescent tablets is an innovation in the form of functional drinks that are more practical and have advantages over other conventional oral solid dosage forms. As a form of drug, effervescent tablets provide instantaneous preparation of a solution containing the correct dose of drug so that the active substance is already in its particle form (no need for disintegration time) so that it can be quickly absorbed and reaches its onset quickly.

Strawberry is a herbal fruit plant that was first discovered in Chile, America. This cross resulted in a hybrid which is a modern (commercial) strawberry Fragaria x ananassavar Duchesne (Darwis, 2007).

Strawberries are usually eaten fresh, but are very perishable with rapid deterioration due to rapid spoilage. Therefore, a good way is to process strawberries into several preparations. Strawberries are consumed in processed products such as jam, jelly, puree, either as canned fruit, or syrup, in drinks as juice, etc. Freshly produced strawberry preparations had higher TPC, anthocyanin and proanthocyanidin content than those stored for six months at 4 and 30°C (Patel, 2018).

Aloe vera (Aloe vera (L.) Webb.) is a popular plant because of its benefits which are increasingly being recognized as a source of raw materials for various products from the food, pharmaceutical and cosmetic industries. Aloe vera contains the nutrients the body needs in full, namely vitamins A, B1, B2, B3, B12, C, E, choline, inositol and folic acid. Some of these vitamins

and minerals can function as natural antioxidants, such as vitamin C, vitamin E, vitamin A, magnesium and zinc.

Tablets are made by compressing the main ingredient with a mixture of organic acids and bases. In addition, fillers, binders, and lubricants are also needed. Effervescent tablets have been developed for pharmaceutical products for a long time, usually as calcium and vitamin C supplements (Rosida et al., 2017).

In the manufacture of effervescent tablets, the source of acid is a very important ingredient, where the acid will react with the carbonate material to form CO2 gas. CO2 gas produced by effervescent tablets is the result of a chemical reaction between the ingredients of the tablet and the solvent (water). In the presence of CO2 gas, tablets can dissolve themselves which helps the dissolution process (Tanjung and Puspitasari, 2019).

In this study, researchers combined citric acid with another acid, namely tartaric acid because a mixture of effervescent powders would be better if prepared from a combination of citric acid and tartaric acid rather than just one type of acid. The use of single acid materials will cause difficulties. If tartaric acid is used as the sole acid, the resulting powder mixture will easily lose its strength and agglomerate, while using citric acid alone will result in a sticky mixture.

Citric acid has a high solubility in water and is easily obtained in the form of granules, this is why citric acid is more often used as a source of acid in the manufacture of effervescent tablets. Tartaric acid is used as a source of acid because tartaric acid has very good solubility in water. Tartaric acid is also a source of acid which is widely used in effervescent preparations (Rohdiana, 2003).

Citric acid and tartaric acid have their own properties which, when mixed, will affect the physical properties of the resulting effervescent tablets of strawberry fruit dry extract and aloe vera dry extract, including hardness, friability and dissolving time. Therefore, a research was conducted on the optimum mixture of citric acid and tartaric acid as a source of acid in the manufacture of effervescent tablets of dry extract of strawberry fruit and dry extract of aloe vera.

The most important additional material in the manufacture of effervescent tablets is a binder. Binders function to provide cohesiveness and durability of the tablet, thus ensuring the unification of several powder particles in a single granule. Polyvinyl pyrrolidone (PVP) is one of the binders that is often used in the manufacture of effervescent tablets because it has good flow properties, produces fewer fines (fine matter or powder) and has better compactibility. PVP is also capable of being a dry binder. The use of PVP as a binder produces tablets that are not hard, disintegrate quickly so that they are quickly dissolved in body fluids, absorbed, then distributed throughout the body and systemic circulation and provide therapeutic effects (Putra et al., 2019).

In the manufacture of effervescent tablets, it is necessary to fill the filler. Filler materials in tablet manufacturing are the materials that are used to provide the appropriate size for the manufacture of tablets and make it easier in the tablet manufacturing process. In this research, the filler balance of malltodextrin was used. Malltodextrin is a relatively inexpensive filler, more commercial, easy to obtain and more frequently used in industry than other fillers (Lynaltral et al., 2018).

Lubricants are also important in the manufacture of effervescent tablets. This hall is called algalr tablet not sticky paldal cetalkaln (maltris). Examples of lubricants are PEG 6000, Tallk and Mg Stealralt. The most ideal lubricant for the preparation of effervescent tablets is Mg Stealralt. Mg Stealralt is used for its flow-soluble kalrenal properties (Alpsalri et all., 2018).

METHOD

The method used in the manufacture of effervescent tablets is the direct compaction method, namely the direct compaction method, namely the manufacture of tablet with direct calral coagulation of the powdered calmpural (active substance in the excipient), in no previous process, except for balancing in blending (Okalpralstowo et al., 2011). The advantages of this method are that it is easy to paste,

because it uses conventional tablet counters, counterbalances are easy to paste, in a short procedure. The drawback of this method is that it cancels out active substances with small doses and has backflow properties (Suhery et al., 2016)

The research on the manufacture of effervescent tablets with dry extract of strawberry fruit and dry extract of aloe vera uses valrialble salt, namely the comparison of alsalm citral to alsalm talralt with tigal talalf as follows:

A = Citric acid (76,5 mg/1,91%) : : Tartric Acid (943,5 mg/23,59%)
B = Citric acid (78 mg/1,95%) : Tartric Acid (942 mg/23,55%)
C = Citric acid (79,5 mg/1,99%) : Tartric Acid (940,5 mg/23,51%)

The experimental design used in this study was a factorial Randomized Block Design (RAK) with 2 factors, the Al factor (asam citral concentration) consisted of 3 talrals and the B factor (asam talral concentration) consisted of 3 talral, so that in 9 combinations of treatments. Each treatment was repeated 3 times in total, so that 27 salts were obtained. The proposed research model can be seen in Table 1 and then out of the 3x3 falcontorial RAAlK experiment with 3 repetitions in Table 2.

Table 1. Group Calk Design Model (RAK)

Citric Acid Concentration (A)	**Tartric Acid Concentration (B)**	Test		
		I	**II**	**III**
a_1	b_1	a_1b_1	a_1b_1	a_1b_1
	b_2	a_1b_2	a_1b_2	a_1b_2
	b_3	a_1b_3	a_1b_3	a_1b_3
a_2	b_1	a_2b_1	a_2b_1	a_2b_1
	b_2	a_2b_2	a_2b_2	a_2b_2
	b_3	a_2b_3	a_2b_3	a_2b_3
a_3	b_1	a_3b_1	a_3b_1	a_3b_1
	b_2	a_3b_2	a_3b_2	a_3b_2
	b_3	a_3b_3	a_3b_3	a_3b_3

Source: Gaspersz, 2006.

Table 2. *Lay Out* Inside experiment RAK

Repeat Group 1	**a_3b_1**	**a_2b_3**	**a_1b_1**	**a_1b_3**	**a_3b_3**	**a_2b_1**	**a_1b_2**	**a_3b_2**	**a_2b_2**
Repeat Group 2	a_1b_3	a_3b_3	a_2b_1	a_2b_2	a_2b_3	a_3b_1	a_3b_2	a_1b_2	a_1b_1
Repeat Group 3	a_2b_3	a_1b_3	a_3b_3	a_2b_1	a_3b_2	a_1b_2	a_1b_1	a_3b_1	a_2b_2

In order to prove that the difference in the effect of the treatment in the interaction of the signals to all the experimentally feasible responses, a data analysis was carried out with the experimental model as follows:

$$\mathbf{Y_{i\,j\,k} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \kappa_k + \varepsilon_{i\,j\,k}}$$

$Y_{i\,j\,k}$: : The results of experience for factor Al (asam citral concentration) level i, factor B (concentration of alsalm citral) tartaric acid) level to the k group
M : Common Middle Value
α_i : The effect of factor A (citric acid concentration) on level i
β_j : The effect of factor B (tartric acid concentration) on the jth level
$(\alpha\beta)_{ij}$ the effect of AB interaction at the i level (from factor A (citric acid concentration)), and the j (from factor B (tartric acid concentration)
κ_k : group influence to k
ε_{ijk} : random effect (trial error) at level i (factor A (citric acid concentration)),

the j level (factor B (tartric acid concentration)), the i and j interactions of AB

Design Analysis

Based on the experimental results above, to facilitate testing, an analysis of variance test (ANOVA) was carried out as follows:

Table 3. Analysis of Variety with RAK Basic Design

Source Diversity	**Free Degrees (DB)**	**Sum of Squares (JK)**	**Middle Square (KT) (JK/DB)**	**F Hit**	**F Table 5%**
Group	r-1	JKK	KTK		3.63
Treatment	ab-1	JKP	KTP		3.63
Citric Acid Concentration (A)	a-1	JK(A)	KT(A)	KT(A)/KTG	3.01
Tartric Acid Concentration (B)	b-1	JK(B)	KT(B)	KT(B/KTG	
Interaksion (AB)	(a-1)(b-1)	JK(AB)	KT(AB)	KT(AB)/KTG	
Galat	(r-1)(ab-1)	JKG	KTG		
Total	rlk-1	JKT	-		

Source: Gaspersz, 2006.

Response Plan

The response designs used in this study included chemical responses, physical responses and organoleptic responses. The chemical response that was carried out was analysis of flow rate, levels of vitamin C, Total Soluble Solids and Alantioxidal analysis (DPPH) for the reverse sample. The physical response that was carried out was the hardness test, the uniformity of the weight in the time of dissolution. The organoleptic response that was carried out was the initial hedonic (addictability) test, the ralsal and the alromal response to the effervescent tablet. Orgalnoleptic responses are carried out by using Descriptive Quantitative Analysis (ADK) to apply a method that can be carried out by trained assessors in non-palcal terms (Mohalmmald, 2016). The scale of the evaluation of the test can be seen in Table 4.

Table 4. *The Hedonic Test Value Scale*

The Hedonic Scale	**Numerical Scale**
Do not like	1
Rather dislike	2
Neutral	3
Rather like	4
Like	5

Source: Utami, 2018.

Best Sample Determination

Determination of the reverse sample from the manufacture of effervescent tablets using the statistical method (scoring). The data used is aldallalh daltal which has been done daltal processing and the daltal values of daltal transformations are falsified responses. Determination of the range of scores is based on the highest class of sparse responses. Scores are sorted based on the lowest response values from the lowest to the highest. Balnyaknyal score according to the total score of aldal pallidal organoleptic response, namely 5. The value of all responses (chemical response, physical and orgalnoleptic) in each treatment is totaled. The treatment that has the highest total score is the reverse sample.

Experiment Description

The first step of making effervescent granules is divided into dual calmpuraln. Calmpuralin pertalmal mixes PVP K30 together with paldal binder, dry extract of strawberry fruit and dry extract of aloe vera mixed with malltodextrin, sodium bicarbonate in stevial sugar, then grinds until homogeneous and alkalinizes with mesh no. 14. The granules are then dried in an allalt dryer (oven) at

a temperature of 50^0 C until dry, then the alkalinization is carried out again with mesh no. 16. The second mixture is mixed with citrate and talc in porcelain porcelain, then added with curing agent and mixed until homogeneous. Then, the limepural is dried in an allalt dryer (oven) at a temperature of 50^0 C until dry, then dialyzed again with alkali no. 16. The two mixtures are then mixed until they are homogeneous and a granular effervescent is obtained (Anwar, 2010).

The second step is the manufacture of an effervescent tablet of dry extract of strawberry fruit and the dry extract of aloe vera which is prepared in 9 treatments. The processing is done by mixing crystallized granular effervescent with Mg stealralt as a lubricant, then the tablet is thickened using the compacting method directly using a tablet press machine. The tablet that has been printed is tested for the physical properties of the tablet, chemical response and organoleptic response.

Table 5. Formulation of Strawberry Extract Effervescent Tablets in Aloe Vera Extract

Material	Weight (miligram)	formula (%)
Strawberry Extract	1563,75	39,09
Aloe Vera Extract	271,25	6,78
Citric Acid	76,5;78;79,5	1,91;1,95;1,99
Tartric Acid	943,5;942;940,5	23,58;23,55;23,51
Na. bikarbonat	1.020	25,50
Stevia	60	1,50
PVP K30	40	1,00
Mg. Stearat	5	0,13
Maltodekstrin	20	0,50
TOTAL	4000	100

Source : Husaini, 2019.

RESULTS AND DISCUSSION

Chemical Response

Water content

The chemical response that was carried out was testing the flow rate on the effervescent tablet. Based on Table 6, the comparison of the concentrations of alsalm citral and alsalm talc and the interaction between the two gave an effect on the flow rate of effervescent tablet dry strawberry extract and aloe vera dry extract.

Table 6. Results of Analysis of Moisture Content of Strawberry Dry Extract Effervescent Tablets and Aloe Vera Dry Extract (Factor A)

Citric Acid Concentration	Average (%)	Real Level 5%
1,91% (a1)	2,18	a
1,95% (a2)	2,29	b
1,99% (a3)	2,49	c

Note: Each different letter in the column of significance indicates a significant difference by 5% Duncaln's test.

Based on the Talbel dials, the comparison of citric acid concentration affects the flow rate of effervescent tablets (Al Factor). The lowest flow rate was found in the effervescent tablet which had the lowest concentration of citric acid, namely 1.91%. The lower the acid citral content, the lower the malkal content of water in the tablet. This hall is in accordance with the opinion of Liebermaln et all. (1994) in Husalini (2019) citric acid is a highly hygroscopic alsidual salt.

Table 7. Results of Flow Rate Analysis of Talblet Effervescent Dried Strawberry Extract in Aloe Vera Dry Extract (Factor B)

Citric Acid Concentration	Average (%)	Real Level 5%
23,59% (b1)	2,10	a
23,55% (b2)	2,28	b

23,51% (b3)	2,58	c

Note: Each different letter in the significance level column indicates a significant difference at the 5% level of Duncaln's test.
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Table 8. The Effect of Interaction Concentrations of Citric Acid and Tartaric Acid on Halal Flow Rate of Effervescent Tablets Strawberry Extract on Aloe Vera Extract (Factor AB)

Factor A	Factor **B**		
	B1	**B2**	**B3**
A1	A 1.71 a	B 2.36 b	A 2.47 c
A2	C 2.37 b	A 1.97 a	B 2.54 c
A3	B 2.23 a	C 2.52 b	C 2.73 c

Note: The average values of the treatments are based on the notational letters which are the same as showing no significant difference in the notation of different letters showing significant differences according to the Duncan follow-up test at the 5% significance level. Lower case notation is read vertically. Capital letter notation is balanced horizontally.

Based on the table above, the concentration of citric acid and concentration of tartaric acid and the interaction between the two were significantly different at the 5% level. The higher the concentration of citric acid and the higher the concentration of alsalm talc, the lower the flow of effervescent tablet of dry strawberry extract and the lower the extract of aloe vera, this is because citric acid is more hygroscopic than tartaric acid.

Vitamin C levels

The chemical response that was carried out was testing the levels of vitalmin C in the effervescent tablet. Based on Table 9, the comparison of the concentration of citric acid and alkaline talc and the interaction between the two gives an effect on the flow rate of the effervescent tablet.

Table 9. Results of Analysis of Vitalmin C Levels of Effervescent Tablets Strawberry Dry Extract in Aloe Vera Dry Extract (Factor A)

Citric Acid Concentration	**Average (gram)**	**Real Rate 5%**
1,91% (a1)	455,32	a
1,95% (a2)	467,37	b
1,99% (a3)	478,16	c

Note: Each different letter in the significance level column indicates a significant difference by 5% Duncaln's test.

Based on the Talbel dialtals, the valriation of the comparison of citric acid concentrations gave the opposite effect on vitamin C tablet effervescent dry extract of strawberry and dry extract of aloe vera. The lower the concentration of citric acid, the higher the level of vitamin C that is produced.

Table 10. Results of Analysis of Vitamin C Effervescent Tablet Levels Strawberry Dry Extract in Aloe Vera Dry Extract (Factor B)

Citric Acid Concentration	**Average (grams)**	**Real Rate 5%**
23,59% (b1)	459,26	a
23,55% (b2)	464,92	b
23,51% (b3)	476,67	c

Description: Each different letter in the talral column shows a significant difference at the level of 5% Duncaln's test

Based on the table above, variations in the comparison of concentrations of almond talc have an effect on the levels of vitamin C effervescent tablet dry extract of strawberry and dry extract of aloe vera. The higher the concentration of almond tartrate, the higher the level of vitamin C that is produced.

Table 11. The Interaction Effect of Citric Acid and Tartric Acid Concentrations on Levels of Vitamin C Eff. Strawberry Dry Extract in Aloe Vera Dry Extract (AB Factor)

Factor A	**Factor B**		
	B1	**B2**	**B3**
A1	A 452.49 A	B 451.99 B	C 461.48 C
A2	A 462.69 B	A 468.13 A	A 471.27 C
A3	B 462.60 A	C 474.63 B	C 497.26 C

Note: The mean value of the treatment is based on the notation of letters that are normal, indicating no significant difference in the notation of letters that are different, indicating significant differences according to the follow-up test, with a 5% real-time ratio. Lowercase notation is read vertically. Capital letter notation is read horizontally.

Level of Total Soluble Solids (TSS) or Total Dissolved Solids

The chemical response that was carried out was testing the level of total dissolved paldal talin in the effervescent tablet. Based on Table 12, the comparison of concentrations of alsalm citralt and alsalm tartrate and the interalk signaling gives an effect on the total caldal concentration of dissolved salts in the effervescent tablet.

Table 12. Analysis Results of Total Dissolved Solids of Effervescent Talblet Strawberry Dry Extract in Aloe Vera Dry Extract (Factor A)

Citric Acid Concentration	**Average (brix)**	**Real Rate 5%**
1,91% (a1)	6,83	a
1,95% (a2)	7,10	b
1,99% (a3)	7,46	c

Note: Each different letter in the significance column indicates a significant difference at the 5% Duncaln test.

Based on the table above, the concentration of citric acid has an effect on the total concentration of dissolved paldal talin in effervescent tablets. The higher the concentration of alkaline citral is added, the higher the total dissolved solids content of the effervescent tablet, this is because sucrosal alkali can be hydrolyzed by acid. The rate of hydrolysis of sucrosal is affected by temperature, an increase in the total dissolved solids causes calrenal to occur, the breaking of the long chain of carbohydrate compounds, which are salts, are thickened by acids so that they become soluble sugar compounds.

Table 13. Analysis Results of Total Dissolved Solids of Effervescent Talblet Strawberry Dry Extract in Aloe Vera Dry Extract (Factor B)

Tartric Acid Concentration	**Average (brix)**	**Real Rate 5%**
23,59% (b1)	7,44	a
23,55% (b2)	7,26	b
23,51% (b3)	6,68	c

Note: Each different letter in the total column shows a significant difference in the total value of 5% Duncaln's test.

The total dissolved solids are usually measured by the amount of dissolved sugar in a product. Total dissolved salts were tested using a haland refractometer. As with citric acid, the more tartaric acid is added to the malalkaline, the more total sodium the effervescent dissolved solids, calrenal and alkaline hydrolysis of sugar by acid.

Table 14. The effect of the interaction of citric acid and tartaric acid concentrations on total dissolved solids (talblet) Eff. Strawberry Dry Extract in Aloe Vera Dry Extract (Factor AB)

Factor A	**Factor B**		
	B1	**B2**	**B3**
A1	a 7.21 A	b 7.13 B	b 6.14 B
A2	b 7.41 C	a 7.28 A	a 6.60 B
A3	b 7.69 A	b 7.38 B	b 7.30 B

Note: The average value of the treatment is based on the letter notation which is normal, indicating no significant difference in the different letter notation, indicating significant difference according to the Duncan follow-up test at the 5% significance level. Lowercase letter notation is balanced vertically. Capital letter notation is balanced horizontally.

Physical Response

Hardness Test

The hardness test aims to determine the thickness of the tablet against mechanical failure. This test is used as a measure of the compaction pressure. Test the hardness of the tablets by one by one up to 10 tablets using a hardness tester. This tool automatically shows the hardness of the tablet with the number that appears on the tool in saltual kg/cm3. The hardness of the introduced talblet is 4 to 8 kg/cm3 (Alalwiyah, 2012).

Table 15. Hardness Test Results of Strawberry Dry Extract Effervescent Tablets in Aloe Vera Dry Extract (Factor A)

Citric Acid Concentration	**Average (kg/cm3)**	**Real Rate 5%**
1,91% (a1)	4,72	a
1,95% (a2)	4,90	b
1,99% (a3)	5,26	c

Note: Each different letter in the total column shows a significant difference in the total value of 5% Duncaln's test.

Based on the table above, the ratio of concentrations of alkaline citral has an effect on the hardness of the tablet. The higher the concentration of added citrate, the more malalt will increase the hardness of the tablet. According to Alnsel (2005) in Allalwiyalh (2012), effervescent galrals are processed from a combination of alsalm, when the use of alsalm alone is alkaline, it causes difficulty. The source of the acid used in this effervescent tablet is the combination of citric acid and tartaric acid. Besides that, the factor that affects the hardness of the tablet is the pressure of compression and the nature of the thickness that is compacted in terms of its relationship to the way the crumbling of the tablet dissolves.

Table 16. Hardness Test Results of Strawberry Dry Extract Effervescent Tablets in Aloe Vera Dry Extract (Factor B)

Tartric Acid Concentration	**Average (kg/cm3)**	**Real Rate 5%**
23,59% (b1)	4,88	a

23,55% (b2)	4,95	b
23,51% (b3)	5,05	c

Note: Each different letter in the talral column shows a significant difference at the 5% level of Duncaln's test

Based on the table of dials, the comparison of the concentration of alsalm talc has an effect on the hardness of the talc. The lower the concentration of added tartaric acid, the greater the increase in the hardness of the tablet. Citric acid has a more significant effect on the hardness of tablets than tartaric acid.

Table 17. The Effect of Interaction Concentrations of Citric Acid and Tartric Acid on the Tartarsalt Effervescent Tablets Strawberry Extract and Aloe Vera Extract (Factor AB)

Factor A	**Factor B**		
	B1	**B2**	**B3**
A1	A 4.70 a	B 4.73 b	C 4.75 c
A2	B 4.83 c	B 4.92 a	B 4.95 b
A3	C 5.12 a	C 5.20 b	C 5.47 b

Note: The treatment values based on the letter notation which are normal show no significant difference in the different letter notation show significant difference according to Duncal's follow-up test at 5% realtality. Lowercase letter notation is balanced vertically. Capital letter notation is balanced horizontally.

Based on the table above, the interaction between the concentrations of citric acid and tartaric acid has an effect on the hardness of the tablet. The addition of citric acid concentrations from low concentrations to high concentrations causes the value of the hardness of the tablets to become greater. Since the true value of citric acid is greater than that of tripalal acid talc in the interaction between the two, it is likely that citric acid will predominate in increasing the hardness response of the tablet.

Late Time

The next physical response is the walkthrough test. According to Baldalin POM (2014), the running time is < 5 minutes. Table 18 shows that all of the treatments have a return trip, which is less than 5 minutes. This shows that all treatments meet quality requirements. On the other hand, the melting time of the effervescent tablet proceeds quickly, so the use of this preparation in the form of a solution is assessed practically as a result of taking it as a solution.

Table 18. Halsil Test Walkthrough of Talblet Effervescent Dried Strawberry Extract in Aloe Vera Dry Extract (Factor A)

Citric Acid Concentration	**Average (minutes)**	**Real Rate 5%**
1,91% (a1)	3,69	a
1,95% (a2)	3,50	b
1,99% (a3)	3,37	c

Note: Each different letter in the total column shows a significant difference in the total value of 5% Duncaln's test.

Based on Talbel dials, the higher the concentration of alsalm citral, the slower the brewing process of the tablet will be, the faster. This is because citric acid has a high solubility in water and is very hygroscopic so that when it flows freely (Alalwiyah, 2012).

Table 19. Halsil Dissolving Time Test of Strawberry Dry Extract Effervescent Tablets in Aloe Vera Dry Extract (Factor B)

Tartric Acid Concentration	Average (minutes)	Real Rate 5%
23,59% (b1)	3,60	a
23,55% (b2)	3,51	b
23,51% (b3)	3,45	c

Note: Each different letter in the total column shows a significant difference in the total value of 5% Duncaln's test.

Based on the table of dials, the lower the concentration of alsalm talc, the slower the soluble effervescent talblet, the faster it will be. This is understandable because alsalm citral has a more reverse solubility than thaltralic acid.

Table 20. The Effect of Interaction of Citric Acid and Tartric Acid Concentrations on Halal Walkthrough of Talblet Effervescent Dry Strawberry Extract and Aloe Vera Dry Extract (AB Factor)

Factor A	Factor B		
	B1	**B2**	**B3**
A1	B 3.72 c	C 3.72 b	AB 3.64 a
A2	B 3.69 c	B 3.43 b	A 3.36 a
A3	A 3.40 ab	A 3.37 a	A 3.34 a

Note: The treatment values based on the normal letter notation show no significant difference in different letter notation show significant difference according to Duncal's follow-up test at 5% realtality. Lowercase letter notation is balanced vertically. Capital letter notation is read horizontally.

Based on the dialtals table, it shows that the interaction between citric acid and talctral acid in determining the response time dissolves. The higher the concentration of alsalm citral and the lower the concentration of alsalm tartralt, the faster the dissolution of the effervescent tablet. The results of the test showed that the treatment using two types of acids had a fairly low dissolving time. The reverse walkthrough is owned by the treatment with the lowest walkthrough. This is in accordance with the opinion of Allalwiyalh (2012), in which conditions citric acid and tartaric acid have greater porosity.

Weight Uniformity Test

This test is carried out to find out whether the printed tablets have a uniform weight or not, since this can affect the integrity of the contents of the finalized tablets. The test is assessed based on the signal valrial coefficient (% CV).

Table 21. Weight Uniformity Test Results of Strawberry Dry Extract Effervescent Tablets and Aloe Vera Dry Extract

Citric Acid Concentration	Concentration of Tartaric Acid (B)		
(A)	**b1 (23,59%)**	**b2 (23,55%)**	**b3 (23,51%)**
a1 (1,91%)	4,97	4,40	4,97
a2 (1,95%)	4,74	4,74	4,97
a3 (1,99%)	4,49	4,33	4,74

Based on the sales tables, all treatments have a CV that is less than 5%, so that the tablets in the analysis fulfill the quality requirements (British Phalleral Copoeial Volume IV, 2007). The smaller the value of CV Malkal with tablet, the more uniform the formula will be.

Hedonic Test

The organoleptic response that was carried out was a hedonic test for the initial attribute, ralsal, in the aroma of effervescent tablet infusion of dry extract of strawberry fruit and dry extract of aloe vera. The effervescent tablet was brewed with 200 ml of mineral water, then a test was carried out based on the panelist's preference level.

Color

The hedonic test was carried out on the initial attributes of an effervescent tablet dry extract of strawberry fruit and dry extract of aloe vera. Based on Table 22, the comparison of concentrations of alsalm citral and the hallucinogenic effect of effervescent tablet preparation of dry extract of strawberry fruit and dry extract of aloe vera.

Table 22. Hedonic Test Results for the Color of Dry Extract Effervescent Tablets Strawberry Fruit in Aloe Vera Dry Extract (Factor A)

Citric Acid Concentration	Average	Real Rate 5%
1,91% (a1)	1,97	a
1,95% (a2)	1,99	b
1,99% (a3)	2,01	c

Note: Each different letter in the significance column indicates a significant difference at the 5% Duncaln test level.

Based on the table above, the ratio of citric acid concentrations has the lowest effect on the initial preparation of the tablet, the higher the concentration of citric acid, the more concentrated the resulting color will be. According to (Lynaltral et al., 2018) a thick color implies a very sour taste due to the content of citric, tartaric and malic acids.

Flavor

The hedonic test was then carried out on the taste attributes of the brewed effervescent tablet dry extract of strawberry and dry extract of aloe vera. Based on Talbel 23, the comparison of citric acid concentrations has an effect on the taste of effervescent tablet infusion of strawberry extract and dry extract of aloe vera.

Table 23. Hedonic Test Results of Dry Extract Effervescent Tablets Strawberry Fruit in Aloe Vera Dry Extract (Factor A)

Citric Acid Concentration	Average	Real Rate 5%
1,91% (a1)	1,99	a
1,95% (a2)	2,03	b
1,99% (a3)	2,06	c

Note: Each different letter in the total column shows a significant difference in the total value of 5% Duncaln's test.

Based on the table above, the comparison of concentrations of alsalm citral has an effect on the brewing taste of the tablet. The panelist's preference level tends to be sour. The sour taste is produced from the addition of citric acid to talc, as well as from the dry extract of strawberry fruit, which tends to be sour. The sour taste is a characteristic of carbonated drinks due to the presence of acid which reacts with sodium carbonate to form carbon dioxide (Siregalr, 2007). As for the sweetener used, namely stevia sugar so that the level of sweetness is slightly less than the effervescent traffic.

Aroma

The hedonic test was then carried out on the natural attributes of brewing effervescent tablets of dry strawberry extract and dry extract of aloe vera.

Table 24. Hedonic Test Results for the Aroma of Stewing Dry Extract Effervescent Tablets Strawberry Fruit in Aloe Vera Dry Extract

Comparison		Average	Real Rate 5%
Concentration of	1,91% (a1)	1,95	a

Citric Acid (A)	1,95% (a2)	1,96	a
	1,99% (a3)	1,96	a
Concentration of Tartric Acid (B)	23,59% (b1)	1,95	a
	23,55% (b2)	1,96	a
	23,51% (b3)	1,96	a

Note: Each different letter in the total column shows a significant difference in the total value of 5% Duncaln's test.

Based on the table of dialts, the comparison of the concentrations of alsalm citral and alsalm talc and the interaction signals does not give any effect on the alromal content of the tablet. The panelists could not distinguish the aroma of the drink from the sample served. The aroma that smells originates from the dry extract of strawberry and the dry extract of aloe vera.

Best Sample Determination

Based on the results of the calculations, the determination of the reverse sample was carried out using the scoring method in terms of chemical, physical and organoleptic responses. The results of determining the inverted sample in this study can be seen in the following table.

Table 25. Inverse Sample Determination of Dry Extract Effervescent Tablets Strawberry Fruit in Aloe Vera Dry Extract

Sampel	Uji Skoring									
	Kadar Air	Kadar Vit C	TSS	Kekerasan	Waktu Larut	Keseragaman Bobot	Warna	Rasa	Aroma	Total
a1b1	1	1	3	1	2	2	1	1	1	13
a1b2	3	1	3	1	2	1	1	1	1	14
a1b3	3	1	1	1	2	2	3	2	2	17
a2b1	3	1	4	1	2	2	1	2	2	18
a2b2	2	2	3	2	1	1	2	3	3	19
a2b3	4	2	2	2	1	2	3	3	2	21
a3b1	3	1	5	3	1	3	3	3	2	24
a3b2	4	3	4	3	1	3	3	3	2	26
a3b3	5	5	4	4	1	2	2	3	2	28

Note: The highest number of values is an inverted sample

Based on the table above, the best comparison of citric acid and tartaric acid is the treatment that has the highest score, namely the al3b3 sample (1.99%: 23.51%) with a flow rate of 2.49%, vitalmin C 478.16 grams, total solids dissolved (TSS) 7.46%, hardness 5.26 kg/cm3, time of dissolution 3.37 minutes, weight uniformity 4.74%, color 2.01%, taste 2.06% and aroma 1.96%.

Results of Antioxidant Analysis of DPPH Effervescent Tablets Dry Strawberry Extract and Aloe Vera Dry Extract

After obtaining the best sample, further analysis of the antioxidant DPPH effervescent tablet dry extract of strawberry fruit and dry extract of aloe vera was carried out. Parameters used for the measurement of antioxidant activity in the effervescent tablet aldallalh IC50. IC50 is the number that shows the concentration of extracts that is able to inhibit the activity of a free radical by 50% (Molyneux, 2004).

Table 26. Level of Antioxidant Quality

Antioxidant Quality Level	
Strong	IC_{50} <50 ppm
Aktive	IC_{50} 50-100 ppm
Currently	IC_{50} 101-250 ppm
Weak	IC_{50} 250-500 ppm
Not active	IC_{50} >500 ppm

Source : Jun *et al*, 2003.

The results of the antioxidant test on the best sample were al3b3 of 82.78 ppm. Based on the level of antioxidant quality, the sample has an active antioxidant quality. Strawberries are rich in anthocyanin color pigments which contain high antioxidants. Apart from that, stralwberries are also rich in vitamin C, fiber, potassium, folate, low in calories, and contain elallergic almonds. Aloe vera also contains the mineral algalm initially, selenium, calcium, magnesium, potassium, sodium, malngaln, zinc, copper and chromium. These minerals play an important role in managing the paldal enzyme system and metabolism of the body to become antioxidants.

CLOSING

Conclusion

Based on research on the formulation of effervescent tablet dry extract of stralwberry fruit (Fragaria x Anassa) and dry extract of aloe vera (L.) Webb.) with the valriation of citric acid and tartaric acid as a source of acid, the following conclusions are obtained:

1. The ratio of citric acid and tartaric acid affected the water content, vitamin C, total dissolved solids, hardness, dissolution time, weight uniformity, color, and taste of effervescent tablets of dry extract of strawberry fruit and dry extract of aloe vera.
2. The best treatment was al3b3 salt (1.99% : 23.51%) with a moisture content of 2.73%, vitamin C concentration of 497.26 grams, total dissolved solids of 7.30 brix, hardness of 5.47 kg/cm3, walktime 3.34 minutes, CV weight uniformity 4.74%, color 2.01, and taste 2.06.
3. Effervescent tablets of dry extract of stralwberry fruit (Fragaria x Anassa) and dry extract of aloe vera (L.) Webb.) with varying ratios of 1.99% citric acid and 23.51% tartaric acid to produce active antioxidative antioxidants.

Suggestion

Based on this research, suggestions that can be given are as follows:

1. It is necessary to carry out further research in the form of testing the stability of strawberry antioxidants in aloe vera and the application of food products.
2. Formulation reversal is necessary to obtain optimal effervescent tablet formulations.
3. It is necessary to carry out physical analysis of other effervescent tablets to determine the quality of effervescent tablets that are better.

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