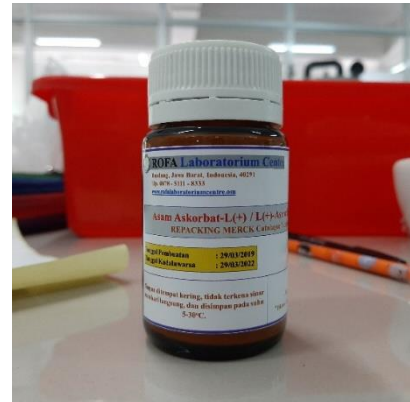


LAMPIRAN

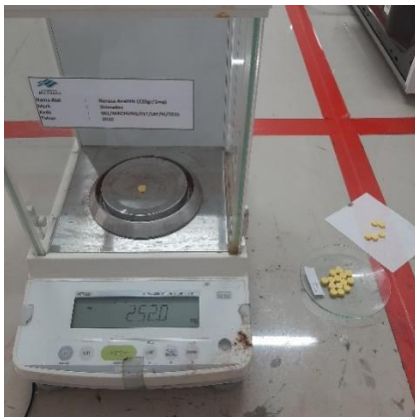
Lampiran 1



Gambar 4.2 Sampel tablet vitamin C



Gambar 4.3 Asam askorbat p.a



Gambar 4.4 Penimbangan tablet vitamin C



Gambar 4.5 Penggerusan tablet vitamin C



Gambar 4.6 Larutan Sampel 500 ppm



Gambar 4.7 Larutan disaring dengan kertas saring



Gambar 4.8
Pengenceran sampel menjadi 10 ppm



Gambar 4.9
Larutan siap diukur

Lampiran 2

2.1 Uji Normalitas

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Kadar	0.143	18	0.200 [*]	0.967	18	0.748

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

2.2 Uji Homogenitas

Tests of Homogeneity of Variances

Kadar		Levene	df1	df2	Sig.
		Statistic			
Kadar	Based on Mean	1.304	5	12	0.325
	Based on Median	0.459	5	12	0.799
	Based on Median and with adjusted df	0.459	5	6.557	0.796
	Based on trimmed mean	1.232	5	12	0.353

2.3 Uji One Way ANOVA

ANOVA

Kadar

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4726.994	5	945.399	3343.060	<0,001
Within Groups	3.394	12	0.283		
Total	4730.387	17			

2.4 Uji Post hoc

Multiple Comparisons

Dependent Variable: Kadar

Bonferroni

(I) Perlakuan	(J) Perlakuan	Mean Difference		Sig.	95% Confidence Interval	
		(I-J)	Std. Error		Lower Bound	Upper Bound
5-60	5-120	0.89000	2.21184	1.000	-7.1808	8.9608
	5-180	4.71000	2.21184	0.819	-3.3608	12.7808
	25-60	-1.19000	2.21184	1.000	-9.2608	6.8808
	25-120	17.83000 [*]	2.21184	0.000	9.7592	25.9008

	25-180	44.95333*	2.21184	0.000	36.8826	53.0241	
5-120	5-60	-0.89000	2.21184	1.000	-8.9608	7.1808	
	5-180	3.82000	2.21184	1.000	-4.2508	11.8908	
	25-60	-2.08000	2.21184	1.000	-10.1508	5.9908	
	25-120	16.94000*	2.21184	0.000	8.8692	25.0108	
	25-180	44.06333*	2.21184	0.000	35.9926	52.1341	
	5-180	-4.71000	2.21184	0.819	-12.7808	3.3608	
5-180	5-120	-3.82000	2.21184	1.000	-11.8908	4.2508	
	25-60	-5.90000	2.21184	0.308	-13.9708	2.1708	
	25-120	13.12000*	2.21184	0.001	5.0492	21.1908	
	25-180	40.24333*	2.21184	0.000	32.1726	48.3141	
	25-60	1.19000	2.21184	1.000	-6.8808	9.2608	
	5-120	2.08000	2.21184	1.000	-5.9908	10.1508	
25-60	5-180	5.90000	2.21184	0.308	-2.1708	13.9708	
	25-120	19.02000*	2.21184	0.000	10.9492	27.0908	
	25-180	46.14333*	2.21184	0.000	38.0726	54.2141	
	25-120	5-60	-17.83000*	2.21184	0.000	-25.9008	-9.7592
	5-120	-16.94000*	2.21184	0.000	-25.0108	-8.8692	
	5-180	-13.12000*	2.21184	0.001	-21.1908	-5.0492	
25-120	25-60	-19.02000*	2.21184	0.000	-27.0908	-10.9492	
	25-180	27.12333*	2.21184	0.000	19.0526	35.1941	
	25-180	5-60	-44.95333*	2.21184	0.000	-53.0241	-36.8826
	5-120	-44.06333*	2.21184	0.000	-52.1341	-35.9926	
	5-180	-40.24333*	2.21184	0.000	-48.3141	-32.1726	
	25-60	-46.14333*	2.21184	0.000	-54.2141	-38.0726	
25-180	25-120	-27.12333*	2.21184	0.000	-35.1941	-19.0526	

*. The mean difference is significant at the 0.05 level.

Lampiran 3

Tabel 4.2 Hasil nilai absorbansi sampel di suhu 5°C pada tablet vitamin C

Replikasi	Lama Penyimpanan (menit)		
	60	120	180
1	0.133825	0.133377	0.128356
2	0.133601	0.132676	0.127997
3	0.133126	0.132199	0.127507
Rata-rata	0.133517	0.132750	0.127953

Tabel 4.3 Hasil nilai absorbansi sampel di suhu 25°C pada tablet vitamin C

Replikasi	Lama Penyimpanan (menit)		
	60	120	180
1	0.136038	0.115969	0.075619
2	0.135482	0.115093	0.074199
3	0.134992	0.113740	0.073986
Rata-rata	0.135504	0.114934	0.074601

Tabel 4.4 Hasil perhitungan kadar di suhu 5°C pada tablet vitamin C

Replikasi	Lama Penyimpanan (menit)		
	60	120	180
1	101.40%	100.75%	96.76%
2	101.23%	100.22%	96.49%
3	100.87%	99.86%	96.12%

Rata-rata	101.16%	100.28%	96.46%
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Tabel 4.5 Hasil perhitungan kadar di suhu 25°C pada tablet vitamin C

Replikasi	Lama Penyimpanan (menit)		
	60	120	180
1	102.76%	87.45%	56.98%
2	102.34%	86.79%	55.91%
3	101.97%	85.77%	55.75%
Rata-rata	102.36%	86.67%	56.21%

Lampiran 4

Perhitungan**1. Kadar tablet vitamin C pada suhu penyimpanan 5°C selama 60 menit**

Diketahui:

$$V_u = 100 \text{ ml}$$

$$V_b = 100 \text{ ml}$$

$$F_u = 50$$

$$F_b = 50$$

$$A_u \text{ replikasi 1} = 0.133825$$

$$A_u \text{ replikasi 2} = 0.133601$$

$$A_u \text{ replikasi 3} = 0.133126$$

$$A_b = 0.66547$$

$$B_r = 252.115 \text{ mg}$$

$$B_u = 50 \text{ mg}$$

$$B_b = 50 \text{ mg}$$

$$K_e = 50 \text{ mg}$$

Ditanya:

- Kadar vitamin C replikasi 1?
- Kadar vitamin C replikasi 2?
- Kadar vitamin C replikasi 3?

Dijawab:

- Kadar vitamin C replikasi 1

$$\begin{aligned}
 &= \frac{V_u}{V_b} \times \frac{F_u}{F_b} \times \frac{A_u}{A_b} \times \frac{B_r}{B_u} \times \frac{B_b}{K_e} \times 100\% \\
 &= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.133825}{0.66547} \times \frac{252.115 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
 &= 1 \times 1 \times 0.201098 \times 5.0423 \times 1 \times 100\% \\
 &= 101.40\%
 \end{aligned}$$

- Kadar vitamin C replikasi 2

$$= \frac{V_u}{V_b} \times \frac{F_u}{F_b} \times \frac{A_u}{A_b} \times \frac{B_r}{B_u} \times \frac{B_b}{K_e} \times 100\%$$

$$\begin{aligned}
&= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.133601}{0.66547} \times \frac{252.115 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
&= 1 \times 1 \times 0.200762 \times 5.0423 \times 1 \times 100\% \\
&= 101.23\%
\end{aligned}$$

- Kadar vitamin C replikasi 3

$$\begin{aligned}
&= \frac{Vu}{Vb} \times \frac{Fu}{Fb} \times \frac{Au}{Ab} \times \frac{Br}{Bu} \times \frac{Bb}{Ke} \times 100\% \\
&= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.133126}{0.66547} \times \frac{252.115 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
&= 1 \times 1 \times 0.200048 \times 5.0423 \times 1 \times 100\% \\
&= 100.87\%
\end{aligned}$$

2. Kadar tablet vitamin C pada suhu penyimpanan 5°C selama 120 menit

Diketahui:

$$Vu = 100 \text{ ml}$$

$$Vb = 100 \text{ ml}$$

$$Fu = 50$$

$$Fb = 50$$

$$Au \text{ replikasi 1} = 0.133377$$

$$Au \text{ replikasi 2} = 0.132676$$

$$Au \text{ replikasi 3} = 0.132199$$

$$Ab = 0.66547$$

$$Br = 251.34 \text{ mg}$$

$$Bu = 50 \text{ mg}$$

$$Bb = 50 \text{ mg}$$

$$Ke = 50 \text{ mg}$$

Ditanya:

- Kadar vitamin C replikasi 1?

- Kadar vitamin C replikasi 2?

- Kadar vitamin C replikasi 3?

Dijawab:

- Kadar vitamin C replikasi 1

$$\begin{aligned}
&= \frac{Vu}{Vb} \times \frac{Fu}{Fb} \times \frac{Au}{Ab} \times \frac{Br}{Bu} \times \frac{Bb}{Ke} \times 100\% \\
&= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.133377}{0.66547} \times \frac{251.34 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
&= 1 \times 1 \times 0.200425 \times 5.0268 \times 1 \times 100\% \\
&= 100.75\%
\end{aligned}$$

- Kadar vitamin C replikasi 2

$$\begin{aligned}
&= \frac{Vu}{Vb} \times \frac{Fu}{Fb} \times \frac{Au}{Ab} \times \frac{Br}{Bu} \times \frac{Bb}{Ke} \times 100\% \\
&= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.132676}{0.66547} \times \frac{251.34 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
&= 1 \times 1 \times 0.199371 \times 5.0268 \times 1 \times 100\% \\
&= 100.22\%
\end{aligned}$$

- Kadar vitamin C replikasi 3

$$\begin{aligned}
&= \frac{Vu}{Vb} \times \frac{Fu}{Fb} \times \frac{Au}{Ab} \times \frac{Br}{Bu} \times \frac{Bb}{Ke} \times 100\% \\
&= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.132199}{0.66547} \times \frac{251.34 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
&= 1 \times 1 \times 0.198655 \times 5.0268 \times 1 \times 100\% \\
&= 99.86\%
\end{aligned}$$

3. Kadar tablet vitamin C pada suhu penyimpanan 5°C selama 180 menit

Diketahui:

$$Vu = 100 \text{ ml}$$

$$Vb = 100 \text{ ml}$$

$$Fu = 50$$

$$Fb = 50$$

$$Au \text{ replikasi 1} = 0.128356$$

$$Au \text{ replikasi 2} = 0.127997$$

$$Au \text{ replikasi 3} = 0.127507$$

$$Ab = 0.66547$$

$$Br = 250.83 \text{ mg}$$

$$Bu = 50 \text{ mg}$$

$$Bb = 50 \text{ mg}$$

$$Ke = 50 \text{ mg}$$

Ditanya:

- Kadar vitamin C replikasi 1?
- Kadar vitamin C replikasi 2?
- Kadar vitamin C replikasi 3?

Dijawab:

- Kadar vitamin C replikasi 1

$$\begin{aligned} &= \frac{Vu}{Vb} \times \frac{Fu}{Fb} \times \frac{Au}{Ab} \times \frac{Br}{Bu} \times \frac{Bb}{Ke} \times 100\% \\ &= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.128356}{0.66547} \times \frac{250.83 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\ &= 1 \times 1 \times 0.219288 \times 5.0166 \times 1 \times 100\% \\ &= 96.76\% \end{aligned}$$

- Kadar vitamin C replikasi 2

$$\begin{aligned} &= \frac{Vu}{Vb} \times \frac{Fu}{Fb} \times \frac{Au}{Ab} \times \frac{Br}{Bu} \times \frac{Bb}{Ke} \times 100\% \\ &= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.127997}{0.66547} \times \frac{250.83 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\ &= 1 \times 1 \times 0.192340 \times 5.0166 \times 1 \times 100\% \\ &= 96.49\% \end{aligned}$$

- Kadar vitamin C replikasi 3

$$\begin{aligned} &= \frac{Vu}{Vb} \times \frac{Fu}{Fb} \times \frac{Au}{Ab} \times \frac{Br}{Bu} \times \frac{Bb}{Ke} \times 100\% \\ &= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.127507}{0.66547} \times \frac{250.83 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\ &= 1 \times 1 \times 0.191604 \times 5.0166 \times 1 \times 100\% \\ &= 96.12\% \end{aligned}$$

4. Kadar tablet vitamin C pada suhu penyimpanan 25°C selama 60 menit

Diketahui:

$$Vu = 100 \text{ ml}$$

$$V_b = 100 \text{ ml}$$

$$F_u = 50$$

$$F_b = 50$$

$$A_u \text{ replikasi 1} = 0.136038$$

$$A_u \text{ replikasi 2} = 0.135482$$

$$A_u \text{ replikasi 3} = 0.134992$$

$$A_b = 0.66547$$

$$B_r = 251.34 \text{ mg}$$

$$B_u = 50 \text{ mg}$$

$$B_b = 50 \text{ mg}$$

$$K_e = 50 \text{ mg}$$

Ditanya:

- Kadar vitamin C replikasi 1?
- Kadar vitamin C replikasi 2?
- Kadar vitamin C replikasi 3?

Dijawab:

- Kadar vitamin C replikasi 1

$$\begin{aligned}
 &= \frac{V_u}{V_b} \times \frac{F_u}{F_b} \times \frac{A_u}{A_b} \times \frac{B_r}{B_u} \times \frac{B_b}{K_e} \times 100\% \\
 &= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.136038}{0.66547} \times \frac{251.34 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
 &= 1 \times 1 \times 0.204424 \times 5.0268 \times 1 \times 100\% \\
 &= 102.76\%
 \end{aligned}$$

- Kadar vitamin C replikasi 2

$$\begin{aligned}
 &= \frac{V_u}{V_b} \times \frac{F_u}{F_b} \times \frac{A_u}{A_b} \times \frac{B_r}{B_u} \times \frac{B_b}{K_e} \times 100\% \\
 &= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.135482}{0.66547} \times \frac{251.34 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
 &= 1 \times 1 \times 0.203588 \times 5.0268 \times 1 \times 100\% \\
 &= 102.34\%
 \end{aligned}$$

- Kadar vitamin C replikasi 3

$$= \frac{V_u}{V_b} \times \frac{F_u}{F_b} \times \frac{A_u}{A_b} \times \frac{B_r}{B_u} \times \frac{B_b}{K_e} \times 10$$

$$\begin{aligned}
&= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.134992}{0.66547} \times \frac{251.34 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
&= 1 \times 1 \times 0.202852 \times 5.0268 \times 1 \times 100\% \\
&= 101.97\%
\end{aligned}$$

5. Kadar tablet vitamin C pada suhu penyimpanan 25°C selama 120 menit

Diketahui:

$$V_u = 100 \text{ ml}$$

$$V_b = 100 \text{ ml}$$

$$F_u = 50$$

$$F_b = 50$$

$$A_u \text{ replikasi 1} = 0.115969$$

$$A_u \text{ replikasi 2} = 0.115093$$

$$A_u \text{ replikasi 3} = 0.113740$$

$$A_b = 0.66547$$

$$B_r = 250.91 \text{ mg}$$

$$B_u = 50 \text{ mg}$$

$$B_b = 50 \text{ mg}$$

$$K_e = 50 \text{ mg}$$

Ditanya:

- Kadar vitamin C replikasi 1?

- Kadar vitamin C replikasi 2?

- Kadar vitamin C replikasi 3?

Dijawab:

- Kadar vitamin C replikasi 1

$$\begin{aligned}
&= \frac{V_u}{V_b} \times \frac{F_u}{F_b} \times \frac{A_u}{A_b} \times \frac{B_r}{B_u} \times \frac{B_b}{K_e} \times 100\% \\
&= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.115969}{0.66547} \times \frac{250.91 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
&= 1 \times 1 \times 0.174266 \times 5.0182 \times 1 \times 100\% \\
&= 87.
\end{aligned}$$

- Kadar vitamin C replikasi 2

$$\begin{aligned}
&= \frac{V_u}{V_b} \times \frac{F_u}{F_b} \times \frac{A_u}{A_b} \times \frac{B_r}{B_u} \times \frac{B_b}{K_e} \times 100\% \\
&= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.115093}{0.66547} \times \frac{250.91 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
&= 1 \times 1 \times 0.172949 \times 5.0182 \times 1 \times 100\% \\
&= 86.79\%
\end{aligned}$$

- Kadar vitamin C replikasi 3

$$\begin{aligned}
&= \frac{V_u}{V_b} \times \frac{F_u}{F_b} \times \frac{A_u}{A_b} \times \frac{B_r}{B_u} \times \frac{B_b}{K_e} \times 100\% \\
&= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.113740}{0.66547} \times \frac{250.91 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
&= 1 \times 1 \times 0.170917 \times 5.0182 \times 1 \times 100\% \\
&= 85.77\%
\end{aligned}$$

6. Kadar tablet vitamin C pada suhu penyimpanan 25°C selama 180 menit

Diketahui:

$$V_u = 100 \text{ ml}$$

$$V_b = 100 \text{ ml}$$

$$F_u = 50$$

$$F_b = 50$$

$$A_u \text{ replikasi 1} = 0.075619$$

$$A_u \text{ replikasi 2} = 0.074199$$

$$A_u \text{ replikasi 3} = 0.073986$$

$$A_b = 0.66547$$

$$B_r = 250.72 \text{ mg}$$

$$B_u = 50 \text{ mg}$$

$$B_b = 50 \text{ mg}$$

$$K_e = 50 \text{ mg}$$

Ditanya:

- Kadar vitamin C replikasi 1?

- Kadar vitamin C replikasi 2?

- Kadar vitamin C replikasi 3?

Dijawab:

- Kadar vitamin C replikasi 1

$$\begin{aligned}
 &= \frac{Vu}{Vb} \times \frac{Fu}{Fb} \times \frac{Au}{Ab} \times \frac{Br}{Bu} \times \frac{Bb}{Ke} \times 100\% \\
 &= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.075619}{0.66547} \times \frac{250.72 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
 &= 1 \times 1 \times 0.113632 \times 5.0144 \times 1 \times 100\% \\
 &= 56.98\%
 \end{aligned}$$

- Kadar vitamin C replikasi 2

$$\begin{aligned}
 &= \frac{Vu}{Vb} \times \frac{Fu}{Fb} \times \frac{Au}{Ab} \times \frac{Br}{Bu} \times \frac{Bb}{Ke} \times 100\% \\
 &= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.074199}{0.66547} \times \frac{250.72 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
 &= 1 \times 1 \times 0.111499 \times 5.0144 \times 1 \times 100\% \\
 &= 55.91\%
 \end{aligned}$$

- Kadar vitamin C replikasi 3

$$\begin{aligned}
 &= \frac{Vu}{Vb} \times \frac{Fu}{Fb} \times \frac{Au}{Ab} \times \frac{Br}{Bu} \times \frac{Bb}{Ke} \times 100\% \\
 &= \frac{100 \text{ ml}}{100 \text{ ml}} \times \frac{50 \text{ ml}}{50 \text{ ml}} \times \frac{0.073986}{0.66547} \times \frac{250.72 \text{ mg}}{50 \text{ mg}} \times \frac{50 \text{ mg}}{50 \text{ mg}} \times 100\% \\
 &= 1 \times 1 \times 0.111176 \times 5.0144 \times 1 \times 100\% \\
 &= 55.75\%
 \end{aligned}$$