

LAMPIRAN

Lampiran 1. Lembar Penilaian Uji Hedonik

LEMBAR PENIALAIAN UJI HEDONIK

Tanggal :

Nama panelis :

Tanda Tangan :

Produk

Berikan penilaian saudara terhadap rasa, aroma dan tekstur berdasarkan kriteria yang bersifat hedonic sebagai berikut:

Amat sangat suka : 9

Sangat suka : 8

Suka : 7

Agak suka : 6

Netral : 5

Agak tidak suka : 4

Tidak suka : 3

Sangat tidak suka : 2

Amat tidak suka : 1

Sampel	Parameter pengujian		
	Rasa	Aroma	Tesktur
S1			
S2			
S3			
Kontrol			

Lampiran 2. Certificate Of Analysis D – Glucose



Certificate of Analysis

1.08337.0000 D(+)-Glucose anhydrous for biochemistry Reag. Ph Eur
Batch K53829137

	Spec. Values		Batch Values	
Assay (calc. on anhydrous substance)	97.5 - 102.0	%	100.0	%
Identity (specific rotation)	passes test		passes test	
Identity (HPLC)	passes test		passes test	
Identity (water)	passes test		passes test	
Appearance of solution	passes test		passes test	
Conductivity	≤ 20	µS/cm	≤ 20	µS/cm
Related substances (sum of impurities A and B)	≤ 0.4	%	≤ 0.4	%
Related substances (impurity C)	≤ 0.2	%	≤ 0.2	%
Related substances (impurity D)	≤ 0.15	%	≤ 0.15	%
Related substances (unspecified impurities)	≤ 0.10	%	≤ 0.10	%
Related substances (Sum of all impurities)	≤ 0.5	%	≤ 0.5	%
Dextrin	passes test		passes test	
Soluble starch, sulfite	≤ 15	ppm	≤ 15	ppm
Residual solvents (ICH Q3C)	excluded by the manufacturing process		excluded by the manufacturing process	
Water (according to Karl Fischer)	≤ 1.0	%	0.1	%

Corresponds to Reag. Ph.Eur.

Minimum shelf life (DD.MM.YYYY) 31.08.2026

Dr. Hans Henning Brewitz
Responsible laboratory manager quality control

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Lampiran 3. Dokumentasi Hasil Pengujian Kadar Protein



PT. SIBAWEH LABORATORIUM INDONESIA
 Jl. Mochamad Toha No. 51C, Bandung 40252,
 Telp./Fax : 022 42822868 email : info@sibaweh.com



SERTIFIKAT ANALISIS
CERTIFICATE OF ANALYSIS
No. : 0168/MT-F34/IV/2025

No. Pesanan/Order No.	0168/KU-F27/IV/2025
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PELANGGAN/PRINCIPAL

Nama/Name	Universitas Bhakti Kencana
Alamat/Address	Jl. Babakan No.91, Majalaya, Kabupaten Bandung
Telepon/Phone	0851-4765-0821
Personel Penghubung/Contact Person	Salma Rachil

CONTOH UJI/SAMPLE

No. Sampel/Sample No.	0168
Nama Sampel/Sample Name	* Cookies Tepung Mocaf
Tanggal Terima/Date of Acceptance	22 April 2025
Tanggal Pengujian/Date of Analysis	23 April 2025
Jenis Pengujian/Type of Analysis	Kandungan Nutrisi
Keterangan Lain/Other Information	-

No./No.	Parameter/Parameter	Metode/Method	Hasil/Result
1	Protein/Protein		
	Pengujian ke-1	IK-SBWH-02-N-II	6,26 %
	Pengujian ke-2	IK-SBWH-02-N-II	5,99 %
	Pengujian ke-3	IK-SBWH-02-N-II	6,31 %

*) Tidak masuk dalam ruang lingkup/Not included in the scope
 **) Kadar lemak dinyatakan sebagai lemak total/Fat content stated as total fat
 ***) Kadar karbohidrat dinyatakan sebagai karbohidrat total/Carbohydrate content stated as total carbohydrate

Bandung, 07 Mei 2025
PT. SIBAWEH LABORATORIUM INDONESIA
 Manager Teknik,


Dr. Ir. H. Asep Dedy Sutrisno, M.P.

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SMM-F-00-34 Rev. 06 05.09.2023

Lampiran 4. Pembuatan cookies

Tepung Mocaf (Modified Cassava Flour)	
Pemangangan cookies	
Hasil cookies yang sudah dipanggang	

Komposisi	Formula kukis			
	(S1)	(S2)	(S3)	(Kontrol)
Tepung mocaf	250 gram	175 gram	75 gram	-
Tepung terigu	-	75 gram	75 gram	250 gram
Mentega	150 gram	150 gram	150 gram	150 gram
Kuning telur	1 butir	1 butir	1 butir	1 butir
Susu bubuk	6 gram	6 gram	6 gram	6 gram
Glukosa	75 gram	75 gram	75 gram	75 gram
Vanilli	5 mL	5 mL	5 mL	5 mL

*S1 adalah kukis yang terbuat dari 100% tepung mocaf, S2 yaitu mocaf 70% dan 30% tepung terigu, S3 mocaf dan terigu masing-masing 50% dan Kontrol 100% tepung terigu

Perhitungan Presentase tepung

$$100 = \frac{100}{100} \times 250 \text{ gram} = 250 \text{ gram}$$

$$50 = \frac{50}{100} \times 250 \text{ gram} = 125 \text{ gram}$$

$$70 = \frac{70}{100} \times 250 \text{ gram} = 175 \text{ gram}$$

$$30 = \frac{30}{100} \times 250 \text{ gram} = 75 \text{ gram}$$

Lampiran 5. Dokumentasi Pengujian Hedonik

Keterangan	Gambar
Sampel (kukis)	
Pengujian hedonik	

Lampiran 6. Hasil Pengujian Hedonik

Skor nilai											
Pengamatan	Formula	Amat tidak suka	Sangat tidak suka	Tidak suka	Agak tidak suka	Netral	Agak suka	Suka	Sangat suka	Amat sangat suka	Total nilai
		1	2	3	4	5	6	7	8	9	
Rasa	S1	-	8	6	32	20	18	56	16	9	165
	S2	1	8	12	8	20	60	35	16	-	160
	S3	-	-	6	24	20	24	70	32	18	194
	Kontrol	-	-	3	12	25	48	56	56	-	200
Aroma	S1	-	4	6	24	45	36	28	16	9	168
	S2	-	-	6	12	55	42	49	16	-	180
	S3	-	-	3	8	25	60	63	32	9	200
	Kontrol	-	-	-	-	65	12	77	16	36	206
Tekstur	S1	-	6	3	16	25	42	21	40	36	189
	S2	-	2	9	12	30	48	49	24	9	183
	S3	-	-	9	8	25	36	56	32	36	202
	Kontrol	-	-	9	8	35	24	98	8	9	191

Lampiran 7. Hasil Analisis Statistik Terhadap Uji Hedonik

1. Rasa

Tests of Normality

	kelompok	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
kesukaan	S01	.213	30	.001	.918	30	.024
	S02	.163	30	.041	.937	30	.077
	S04	.176	30	.018	.918	30	.024
	Kontrol	.159	30	.052	.924	30	.033

a. Lilliefors Significance Correction

	kesukaan
Chi-Square	5.596
df	3
Asymp. Sig.	.133

a. Kruskal Wallis Test

b. Grouping Variable:

kelompok

2. Aroma

Tests of Normality

	kelompok	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
kesukaan	S01	.222	30	.001	.919	30	.025
	S02	.230	30	.000	.891	30	.005
	S03	.173	30	.023	.916	30	.021
	Kontrol	.249	30	.000	.829	30	.000

a. Lilliefors Significance Correction

Test Statistics^{a,b}

	kesukaan
Chi-Square	5.658
df	3
Asymp. Sig.	.129

a. Kruskal Wallis Test

b. Grouping Variable:
kelompok

3. Tekstur

Tests of Normality

	kelompok	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
kesukaan	S01	.172	30	.023	.952	30	.195
	S02	.139	30	.143	.955	30	.234
	S03	.235	30	.000	.926	30	.039
	Kontrol	.275	30	.000	.885	30	.004

a. Lilliefors Significance Correction

	kesukaan
Chi-Square	1.388
df	3
Asymp. Sig.	.708

a. Kruskal Wallis Test

b. Grouping Variable:
kelompok

Lampiran 8. Analisis proksimat

Keterangan	Gambar
Pengujian kadar air	
Pengujian kadar abu	
Pengujian kadar lemak	
Pengujian kadar serat kasar	

1) Perhitungan kadar air

➤ Sampel kukis berbahan dasar tepung mocaf

a. pengulangan 1

Bobot sampel	5,000 gram
Bobot cawan kosong	34,550 gram
Bobot cawan dan sampel setelah di oven	39,321 gram

$$\% \text{ kadar air} = \frac{W_s - (W_1 - W_0)}{W_s} \times 100$$

$$= \frac{5,000 \text{ gram} - (39,321 - 34,550)}{5,000 \text{ gram}} \times 100$$

$$= 4,58 \%$$

b. pengulangan 2

Bobot sampel	5,000 gram
Bobot cawan kosong	32,467 gram
Bobot cawan dan sampel setelah di oven	35,232 gram

$$\% \text{ kadar air} = \frac{W_s - (W_1 - W_0)}{W_s} \times 100$$

$$= \frac{5 \text{ gram} - (37,232 - 32,467)}{5 \text{ gram}} \times 100$$

$$= 4,7\%$$

c. pengulangan 3

Bobot sampel	5,000 gram
Bobot cawan kosong	81,781 gram
Bobot cawan dan sampel setelah di oven	86,556 gram

$$\% \text{ kadar air} = \frac{W_s - (W_1 - W_0)}{W_s} \times 100$$

$$= \frac{5 \text{ gram} - (86,556 - 81,781)}{5 \text{ gram}} \times 100$$

$$= 4,46\%$$

➤ Sampel kukis berbahan dasar tepung terigu

a. pengulangan 1

Bobot sampel	5,016 gram
Bobot cawan kosong	84,704 gram
Bobot cawan dan sampel setelah di oven	89,381 gram

$$\% \text{ kadar air} = \frac{W_s - (W_1 - W_0)}{W_s} \times 100$$

$$= \frac{5,016 \text{ gram} - (89,381 - 84,704)}{5,016 \text{ gram}} \times 100$$

$$= 6,76 \%$$

b. pengulangan 2

Bobot sampel	5,000 gram
Bobot cawan kosong	81,672 gram
Bobot cawan dan sampel setelah di oven	86,335 gram

$$\begin{aligned}
 \% \text{ kadar air} &= \frac{W_s - (W_1 - W_0)}{W_s} \times 100 \\
 &= \frac{5 \text{ gram} - (81,672 - 86,335)}{5 \text{ gram}} \times 100 \\
 &= 6,75\%
 \end{aligned}$$

c. pengulangan 3

Bobot sampel	5,005 gram
Bobot cawan kosong	84,703 gram
Bobot cawan dan sampel setelah di oven	89,373 gram

$$\begin{aligned}
 \% \text{ kadar air} &= \frac{W_s - (W_1 - W_0)}{W_s} \times 100 \\
 &= \frac{5,005 \text{ gram} - (89,373 - 84,703)}{5,005 \text{ gram}} \times 100 \\
 &= 6,73\%
 \end{aligned}$$

2) Perhitungan kadar abu

➤ Sampel kukis berbahan dasar tepung mocaf

a. pengulangan 1

Bobot cawan kosong	66,529 gram
Bobot cawan kosong dan sampel	71,529 gram
Bobot cawan dan abu	66,603 gram

$$\begin{aligned}
 \% \text{ kadar abu} &= \frac{W_2 - W_1}{W - W_1} \times 100 \\
 &= \frac{66,603 \text{ g} - 66,529 \text{ g}}{71,529 \text{ g} - 66,529 \text{ g}} \times 100 \\
 &= \frac{0,074 \text{ g}}{5,000 \text{ g}} \times 100 \\
 &= 1,48\%
 \end{aligned}$$

b. pengulangan 2

Bobot cawan kosong	77,487 gram
Bobot cawan kosong dan sampel	82,490 gram
Bobot cawan dan abu	77,560 gram

$$\begin{aligned}
 \% \text{ kadar abu} &= \frac{W_2 - W_1}{W_3 - W_1} \times 100 \\
 &= \frac{77,560 \text{ g} - 77,487 \text{ g}}{82,490 \text{ g} - 77,487 \text{ g}} \times 100 \\
 &= \frac{0,073 \text{ g}}{5,003 \text{ g}} \times 100
 \end{aligned}$$

$$= 1,46\%$$

c. pengulangan 3

Bobot cawan kosong	70,520 gram
Bobot cawan kosong dan sampel	75,524 gram
Bobot cawan dan abu	70,591 gram

$$\begin{aligned}\% \text{ kadar abu} &= \frac{W_2 - W_1}{W_3 - W_1} \times 100 \\ &= \frac{70,591 \text{ g} - 70,520 \text{ g}}{75,524 \text{ g} - 70,520 \text{ g}} \times 100 \\ &= \frac{0,071 \text{ g}}{5,004 \text{ g}} \\ &= 1,41\%\end{aligned}$$

➤ Sampel kukis berbahan dasar tepung terigu

a. pengulangan 1

Bobot cawan kosong	65,170 gram
Bobot cawan kosong dan sampel	70,174 gram
Bobot cawan dan abu	65,224 gram

$$\begin{aligned}\% \text{ kadar abu} &= \frac{W_2 - W_1}{W - W_1} \times 100 \\ &= \frac{65,224 \text{ g} - 65,170 \text{ g}}{70,174 \text{ g} - 65,170 \text{ g}} \times 100 \\ &= \frac{0,054 \text{ g}}{5,004 \text{ g}} \times 100 \\ &= 1,08\%\end{aligned}$$

b. pengulangan 2

Bobot cawan kosong	66,712 gram
Bobot cawan kosong dan sampel	71,712 gram
Bobot cawan dan abu	66,761 gram

$$\begin{aligned}\% \text{ kadar abu} &= \frac{W_2 - W_1}{W_3 - W_1} \times 100 \\ &= \frac{66,761 \text{ g} - 66,712 \text{ g}}{71,712 \text{ g} - 66,712 \text{ g}} \times 100 \\ &= \frac{0,049 \text{ g}}{5,000 \text{ g}} \times 100 \\ &= 0,98\%\end{aligned}$$

c. pengulangan 3

Bobot cawan kosong	60,583 gram
Bobot cawan kosong dan sampel	65,586 gram
Bobot cawan dan abu	60,638 gram

$$\begin{aligned}
 \% \text{ kadar abu} &= \frac{W_2 - W_1}{W_3 - W_1} \times 100 \\
 &= \frac{60,638 \text{ g} - 60,583 \text{ g}}{65,586 \text{ g} - 60,583 \text{ g}} \times 100 \\
 &= \frac{0,055 \text{ g}}{5,003 \text{ g}} \\
 &= 1,09\%
 \end{aligned}$$

3) Perhitungan kadar lemak

➤ Sampel kukis berbahan dasar tepung mocaf

a. pengulangan 1

Bobot sampel	10,000 gram
Bobot erlenmeyer kosong	177,523 gram
Bobot erlenmeyer dan sampel setelah di oven	180,775 gram

$$\begin{aligned}
 \% \text{ kadar lemak} &= \frac{W_3 - W_2}{W_1} \times 100 \\
 &= \frac{180,775 \text{ g} - 177,523 \text{ g}}{10 \text{ gram}} \times 100 \\
 &= 32,52\%
 \end{aligned}$$

b. pengulangan 2

Bobot sampel	10,000 gram
Bobot erlenmeyer kosong	149,372 gram
Bobot erlenmeyer dan sampel setelah di oven	152,727 gram

$$\begin{aligned}
 \% \text{ kadar lemak} &= \frac{W_3 - W_2}{W_1} \times 100 \\
 &= \frac{152,727 \text{ g} - 149,372 \text{ g}}{10 \text{ gram}} \times 100 \\
 &= 33,55\%
 \end{aligned}$$

c. pengulangan 3

Bobot sampel	10,000 gram
Bobot erlenmeyer kosong	110,917 gram
Bobot erlenmeyer dan sampel setelah di oven	114,199 gram

$$\begin{aligned}
 \% \text{ kadar lemak} &= \frac{W_3 - W_2}{W_1} \times 100 \\
 &= \frac{114,199 \text{ g} - 110,917 \text{ g}}{10 \text{ gram}} \times 100 \\
 &= 32,82\%
 \end{aligned}$$

➤ Sampel kukis berbahan dasar tepung terigu

a. pengulangan 1

Bobot sampel	10,000 gram
Bobot erlenmeyer kosong	111,814 gram
Bobot erlenmeyer dan sampel setelah di oven	114,584 gram

$$\begin{aligned}
 \% \text{ kadar lemak} &= \frac{W_3 - W_2}{W_1} \times 100 \\
 &= \frac{114,584 \text{ g} - 111,814 \text{ g}}{10 \text{ gram}} \times 100 \\
 &= 27,7\%
 \end{aligned}$$

b. pengulangan 2

Bobot sampel	10,000 gram
Bobot erlenmeyer kosong	149,573 gram
Bobot erlenmeyer dan sampel setelah di oven	152,324 gram

$$\begin{aligned}
 \% \text{ kadar lemak} &= \frac{W_3 - W_2}{W_1} \times 100 \\
 &= \frac{152,324 \text{ g} - 149,572 \text{ g}}{10 \text{ gram}} \times 100 \\
 &= 27,73\%
 \end{aligned}$$

c. pengulangan 3

Bobot sampel	10,000 gram
Bobot erlenmeyer kosong	110,917 gram
Bobot erlenmeyer dan sampel setelah di oven	113,692 gram

$$\begin{aligned}
 \% \text{ kadar lemak} &= \frac{W_3 - W_2}{W_1} \times 100 \\
 &= \frac{113,692 \text{ g} - 110,917 \text{ g}}{10 \text{ gram}} \times 100 \\
 &= 27,75\%
 \end{aligned}$$

4) Konversi % kadar lemak per 5 gram sampel

➤ Sampel kukis berbahan dasar tepung mocaf

a. Pengulangan 1

$$\% \text{ kadar} = 32,52\% / 10 \text{ g sampel}$$

$$\text{Konversi} = \frac{32,52 \text{ g}}{10 \text{ g}} \times 5 \text{ g} = 16,26\%$$

b. Pengulangan 2

$$\% \text{ kadar} = 33,55\% / 10 \text{ g sampel}$$

$$\text{Konversi} = \frac{33,55 \text{ g}}{10 \text{ g}} \times 5 \text{ g} = 16,76\%$$

c. Pengulangan 3

$$\% \text{ kadar} = 32,82\% / 10 \text{ g sampel}$$

$$\text{Konversi} = \frac{32,82 \text{ g}}{10 \text{ g}} \times 5 \text{ g} = 16,41\%$$

➤ Sampel kukis berbahan dasar tepung terigu

a. Pengulangan 1

$$\% \text{ kadar} = 27,7\% / 10 \text{ g sampel}$$

$$\text{Konversi} = \frac{27,7 \text{ g}}{10 \text{ g}} \times 5 \text{ g} = 13,85\%$$

b. Pengulangan 2

$$\% \text{ kadar} = 27,73\% / 10 \text{ g sampel}$$

$$\text{Konversi} = \frac{27,73 \text{ g}}{10 \text{ g}} \times 5 \text{ g} = 13,87\%$$

c. Pengulangan 3

$$\% \text{ kadar} = 27,75\% / 10 \text{ g sampel}$$

$$\text{Konversi} = \frac{27,75 \text{ g}}{10 \text{ g}} \times 5 \text{ g} = 13,88\%$$

5) Perhitungan kadar serat kasar

➤ Sampel kukis berbahan dasar tepung mocaf

a. pengulangan 1

Berat sampel	4,006 gram
Bobot kertas saring	1,236 gram
Bobot cawan kosong	64,168 gram
Bobot cawan + kertas saring + residu	65,485 gram

$$\begin{aligned} \text{berat residu} &= (\text{cawan} + \text{kertas} + \text{residu}) - (\text{cawan kosong} + \text{kertas kosong}) \\ &= 65,485 \text{ g} - 65,404 \text{ g} \\ &= 0,081 \text{ g} \end{aligned}$$

$$\begin{aligned} \% \text{ kadar serat kasar} &= \frac{W \text{ residu}}{W \text{ sampel}} \times 100 \\ &= \frac{0,081 \text{ g}}{4,006 \text{ g}} \times 100 \\ &= 2,02\% (> 1\% \text{ diabukan}) \end{aligned}$$

Berat sampel	4,006 gram
Bobot cawan krus kosong	69,220 gram
Bobot cawan krus kosong + abu	69,225 gram
Bobot abu	0,035 gram (W2)

Bobot residu	0,081 gram (W1)
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$$\begin{aligned}
 \% \text{ kadar serat kasar} &= \frac{W_1 - W_2}{\text{bobot sampel}} \times 100 \\
 &= \frac{0,081 \text{ g} - 0,035 \text{ g}}{4,006 \text{ g}} \times 100 \\
 &= 1,15\%
 \end{aligned}$$

b. pengulangan 2

Berat sampel	4,004 gram
Bobot kertas saring	0,640 gram
Bobot cawan kosong	32,466 gram
Bobot cawan + kertas saring + residu	33,177 gram

$$\begin{aligned}
 \text{berat residu} &= (\text{cawan} + \text{kertas} + \text{residu}) - (\text{cawan kosong} + \text{kertas kosong}) \\
 &= 33,177 \text{ g} - 33,106 \text{ g} \\
 &= 0,071 \text{ g}
 \end{aligned}$$

$$\begin{aligned}
 \% \text{ kadar serat kasar} &= \frac{W_{\text{residu}}}{W_{\text{sampel}}} \times 100 \\
 &= \frac{0,071 \text{ g}}{4,004 \text{ g}} \times 100 \\
 &= 1,77\% (> 1\% \text{ diabukan})
 \end{aligned}$$

Berat sampel	4,004 gram
Bobot cawan krus kosong	60,644 gram
Bobot cawan krus kosong + abu	60,671 gram
Bobot abu	0,027 gram (W2)
Bobot residu	0,071 gram (W1)

$$\begin{aligned}
 \% \text{ kadar} &= \frac{W_1 - W_2}{\text{bobot sampel}} \times 100 \\
 &= \frac{0,071 \text{ g} - 0,027 \text{ g}}{4,004 \text{ g}} \times 100 \\
 &= 1,10\%
 \end{aligned}$$

c. pengulangan 3

Berat sampel	4,000 gram
Bobot kertas saring	0,782 gram
Bobot cawan kosong	81,627 gram
Bobot cawan + kertas saring + residu	82,487 gram

$$\begin{aligned}
 \text{berat residu} &= (\text{cawan} + \text{kertas} + \text{residu}) - (\text{cawan kosong} + \text{kertas kosong}) \\
 &= 82,487 \text{ g} - 82,409 \text{ g}
 \end{aligned}$$

$$= 0,078 \text{ g}$$

$$\begin{aligned}\% \text{ kadar serat kasar} &= \frac{W \text{ residu}}{W \text{ sampel}} \times 100 \\ &= \frac{0,078 \text{ g}}{4,000 \text{ g}} \times 100 \\ &= 1,95\% (> 1\% \text{ diabukan})\end{aligned}$$

Berat sampel	4,000 gram
Bobot cawan krus kosong	68,762 gram
Bobot cawan krus kosong + abu	68,792 gram
Bobot abu	0,030 gram (W2)
Bobot residu	0,078 gram (W1)

$$\begin{aligned}\% \text{ kadar} &= \frac{W_1 - W_2}{\text{bobot sampel}} \times 100 \\ &= \frac{0,078 \text{ g} - 0,030 \text{ g}}{4,000 \text{ g}} \times 100 \\ &= 1,2\%\end{aligned}$$

➤ Sampel kukis berbahan dasar tepung terigu

a. pengulangan 1

Berat sampel	4,002 gram
Bobot kertas saring	0,559 gram
Bobot cawan kosong	81,779 gram
Bobot cawan + kertas saring + residu	82,329 gram

$$\begin{aligned}\text{berat residu} &= (\text{cawan} + \text{kertas} + \text{residu}) - (\text{cawan kosong} + \text{kertas kosong}) \\ &= 82,392 \text{ g} - 82,338 \text{ g} \\ &= 0,054 \text{ g}\end{aligned}$$

$$\begin{aligned}\% \text{ kadar serat kasar} &= \frac{W \text{ residu}}{W \text{ sampel}} \times 100 \\ &= \frac{0,054 \text{ g}}{4,002 \text{ g}} \times 100 \\ &= 1,35\% (> 1\% \text{ diabukan})\end{aligned}$$

Berat sampel	4,002 gram
Bobot cawan krus kosong	64,782 gram
Bobot cawan krus kosong + abu	64,804 gram
Bobot abu	0,022 gram (W2)
Bobot residu	0,054 gram (W1)

$$\% \text{ kadar serat kasar} = \frac{W_1 - W_2}{\text{bobot sampel}} \times 100$$

$$= \frac{0,054 \text{ g} - 0,022 \text{ g}}{4,002 \text{ g}} \times 100$$

$$= 0,81\%$$

b. pengulangan 2

Berat sampel	4,004 gram
Bobot kertas saring	0,653 gram
Bobot cawan kosong	32,457 gram
Bobot cawan + kertas saring + residu	33,168 gram

$$\text{berat residu} = (\text{cawan} + \text{kertas} + \text{residu}) - (\text{cawan kosong} + \text{kertas kosong})$$

$$= 33,168 \text{ g} - 33,110 \text{ g}$$

$$= 0,058 \text{ g}$$

$$\% \text{ kadar serat kasar} = \frac{W \text{ residu}}{W \text{ sampel}} \times 100$$

$$= \frac{0,058 \text{ g}}{4,004 \text{ g}} \times 100$$

$$= 1,44\% (> 1\% \text{ diabukan})$$

Berat sampel	4,004 gram
Bobot cawan krus kosong	60,627 gram
Bobot cawan krus kosong + abu	60,655 gram
Bobot abu	0,025 gram (W2)
Bobot residu	0,058 gram (W1)

$$\% \text{ kadar} = \frac{W1 - W2}{\text{bobot sampel}} \times 100$$

$$= \frac{0,058 \text{ g} - 0,025 \text{ g}}{4,004 \text{ g}} \times 100$$

$$= 0,82\%$$

c. pengulangan 3

Berat sampel	4,005 gram
Bobot kertas saring	0,652 gram
Bobot cawan kosong	81,668 gram
Bobot cawan + kertas saring + residu	82,372 gram

$$\text{berat residu} = (\text{cawan} + \text{kertas} + \text{residu}) - (\text{cawan kosong} + \text{kertas kosong})$$

$$= 82,372 \text{ g} - 82,320 \text{ g}$$

$$= 0,052 \text{ g}$$

$$\% \text{ kadar serat kasar} = \frac{W \text{ residu}}{W \text{ sampel}} \times 100$$

$$= \frac{0,052 \text{ g}}{4,006 \text{ g}} \times 100$$

$$= 1,37\% (> 1\% \text{ diabukan})$$

Berat sampel	4,006 gram
Bobot cawan krus kosong	69,657 gram
Bobot cawan krus kosong + abu	69,677 gram
Bobot abu	0,020 gram (W2)
Bobot residu	0,052 gram (W1)

$$\% \text{ kadar} = \frac{W1 - W2}{\text{bobot sampel}} \times 100$$

$$= \frac{0,052 \text{ g} - 0,020 \text{ g}}{4,006 \text{ g}} \times 100$$

$$= 0,79\%$$

6) Konversi % kadar serat kasar per 5 gram sampel

a. Pengulangan 1

$$\% \text{ kadar} = 1,15\% / 4 \text{ g sampel}$$

$$\text{Konversi} = \frac{1,15 \text{ g}}{4 \text{ g}} \times 5 \text{ g} = 1,44\%$$

b. Pengulangan 2

$$\% \text{ kadar} = 1,10\% / 4 \text{ g sampel}$$

$$\text{Konversi} = \frac{1,10 \text{ g}}{4 \text{ g}} \times 5 \text{ g} = 1,38\%$$

c. Pengulangan 3

$$\% \text{ kadar} = 1,2\% / 4 \text{ g sampel}$$

$$\text{Konversi} = \frac{1,2 \text{ g}}{4 \text{ g}} \times 5 \text{ g} = 1,5\%$$

➤ Sampel kukis berbahan dasar tepung terigu

a. Pengulangan 1

$$\% \text{ kadar} = 0,81\% / 4 \text{ g sampel}$$

$$\text{Konversi} = \frac{0,81 \text{ g}}{4 \text{ g}} \times 5 \text{ g} = 1,01\%$$

b. Pengulangan 2

$$\% \text{ kadar} = 0,82\% / 4 \text{ g sampel}$$

$$\text{Konversi} = \frac{0,82 \text{ g}}{4 \text{ g}} \times 5 \text{ g} = 1,03\%$$

c. Pengulangan 3

$$\% \text{ kadar} = 0,79\% / 4 \text{ g sampel}$$

$$\text{Konversi} = \frac{0,79 \text{ g}}{4 \text{ g}} \times 5 \text{ g} = 0,99\%$$

7) Perhitungan karbohidrat

➤ Sampel kukis berbahan dasar tepung mocaf

a. Pengulangan 1

Pengujian	Kadar (%)
Kadar Air	4,58
Kadar Abu	1,48
Kadar Lemak	16,26
Kadar Protein	6,26

$$\begin{aligned}
 \% \text{ kadar Karbohidrat} &= 100 - (4,58 + 1,48 + 16,26 + 6,26) \\
 &= 100 - 28,58 \\
 &= 71,42\%
 \end{aligned}$$

b. Pengulangan 2

Pengujian	Kadar (%)
Kadar Air	4,7
Kadar Abu	1,46
Kadar Lemak	16,76
Kadar Protein	5,99

$$\begin{aligned}
 \% \text{ kadar karbohidrat} &= 100 - (4,7 + 1,46 + 16,76 + 5,99) \\
 &= 100 - 28,91 \\
 &= 71,09 \%
 \end{aligned}$$

c. Pengulangan 3

Pengujian	Kadar (%)
Kadar Air	4,46
Kadar Abu	1,41
Kadar Lemak	16,41
Kadar Protein	6,31

$$\begin{aligned}
 \% \text{ kadar karbohidrat} &= 100 - (4,46 + 1,41 + 16,41 + 6,31) \\
 &= 100 - 28,59 \\
 &= 71,41\%
 \end{aligned}$$

➤ Sampel kukis berbahan dasar tepung terigu

a. Pengulangan 1

Pengujian	Kadar (%)
Kadar Air	6,76
Kadar Abu	1,08
Kadar Lemak	13,85
Kadar Protein	4,97

$$\begin{aligned}
 \% \text{ kadar Karbohidrat} &= 100 - (6,76 + 1,08 + 13,85 + 4,97) \\
 &= 100 - 26,66 \\
 &= 73,34 \%
 \end{aligned}$$

b. Pengulangan 2

Pengujian	Kadar (%)
Kadar Air	6,75
Kadar Abu	0,98
Kadar Lemak	13,87
Kadar Protein	5,01

$$\begin{aligned}
 \% \text{ kadar karbohidrat} &= 100 - (6,75 + 0,98 + 13,87 + 5,01) \\
 &= 100 - 26,61 \\
 &= 73,39 \%
 \end{aligned}$$

c. Pengulangan 3

Pengujian	Kadar (%)
Kadar Air	6,73
Kadar Abu	1,09
Kadar Lemak	13,88
Kadar Protein	5,07

$$\begin{aligned}
 \% \text{ kadar karbohidrat} &= 100 - (6,73 + 1,09 + 13,88 + 5,07) \\
 &= 100 - 26,77 \\
 &= 73,23 \%
 \end{aligned}$$

Lampiran 9. Preparasi sampel

Keterangan	Gambar
Penimbangan sampel 100 mg cookies	
Larutkan dalam 25 mL aquadest mendidih, panaskan pada penangas air selama 10 menit dan sesekali diaduk	
Larutan kemudian di sentrifuge selama 10 menit, lalu ambil fase cair dan dipindahkan kedalam labu takar 50 mL ad dengan aquades.	

Lampiran 10. Pengujian kadar gula total

Keterangan	Gambar
Pembuatan kurva baku	
Uji akurasi	
Uji presisi	

	
Penetapan kadar	 

Lampiran 11. Perhitungan BD dan BK

Konsentrasi ($\mu\text{g/mL}$)	Absorban (Y)	Y'	Y - Y'	$(Y - Y')^2$
0.6	0.297	0.29106	0.00594	3.528E-05
0.8	0.371	0.38798	-0.01698	0.0002883
1	0.499	0.4849	0.0141	0.0001988
1.2	0.576	0.58182	-0.00582	3.387E-05
1.4	0.686	0.67874	0.00726	5.271E-05
1.6	0.771	0.77566	-0.00466	2.172E-05
Jumlah $(Y - Y')^2$				0.00063

Persamaan Regresi Linieritas $Y = 0,4846x + 0,0003$

B (slope) = 0,4846

A (intersep) = 0,0003

R = 0,9981

(S_y/x) = 0,2591

$S_{x0} = \frac{(\frac{S_y}{x})}{B} = \frac{0,012557}{0,4846} = 0,02591$

$V_{x0} = \frac{S_{x0}}{\text{rata-rata}} = \frac{0,02591}{1,1} = 2,35564$

$BD = 3 \times \frac{(\frac{S_y}{x})}{B} = 3 \times \frac{0,012557}{0,4846} = 0,0777361$

$BK = 10 \times \frac{(\frac{S_y}{x})}{B} = 10 \times \frac{0,012557}{0,4846} = 0,2591202$

Lampiran 12. Perhitungan Akurasi

Replikasi	Abs adisi	C adisi	C sampel	% Recovery	Rata-rata ± SD
1	0,550	1,1336	0,4908	81,80	81,92 ± 0,86
2	0,548	1,1295	0,4867	81,12	
3	0,553	1,1398	0,	82,83	
1	0,673	1,3873	0,7706	93,06	91,43 ± 1,55
2	0,661	1,3626	0,7624	89,97	
3	0,666	1,3729	0,7686	91,26	
1	0,766	1,5790	0,7706	93,63	93,63 ± 0,41
2	0,768	1,5832	0,7624	94,04	
3	0,764	1,5749	0,7686	93,22	

$$\begin{aligned}
 \text{Konsentrasi adisi } x &= \frac{Y-a}{b} \\
 &= \frac{0,550 - 0,0003}{0,4849} \\
 &= 1,1366 \mu\text{g/mL}
 \end{aligned}$$

$$\begin{aligned}
 \text{Konsentrasi sampel } x &= \frac{Y-a}{b} \\
 &= \frac{0,312 - 0,0003}{0,4849} \\
 &= 0,6428 \mu\text{g/mL}
 \end{aligned}$$

$$\begin{aligned}
 \% \text{ Recovery} &= \frac{\text{konsentrasi adisi} - \text{konsentrasi sampel}}{C \text{ teoritis}} \times 100\% \\
 &= \frac{1,13366 - 0,6428}{0,6} \times 100\% \\
 &= 81,80\%
 \end{aligned}$$

Lampiran 13. Perhitungan Presisi

Pengukuran 1

Abs adisi	C sampel	C adisi	C sampel – C adisi	C standar
0.681	0.7707	1.4038	0,6331	8
0.679	0.7624	1.3997	0,6372	8
0.676	0.7686	1.3935	0,6249	8
0.677	0.7707	1.3955	0,6249	8
0.679	0.7624	1.3997	0,6372	8
0.675	0.7686	1.3914	0,6228	8
Rata-rata				0,6300
SD				0,057
%RSD				1,051

Pengukuran 2

Abs adisi	C sampel	C adisi	C sampel – C adisi	C standar
0.685	0.7707	1.4120	0,6414	8
0.682	0.7624	1.4059	0,6434	8
0.686	0.7686	1.4141	0,6455	8
0.680	0.7707	1.4017	0,6311	8
0.681	0.7624	1.4038	0,6414	8
0.678	0.7686	1.3976	0,6393	8
Rata-rata				0,6386
SD				0,096
%RSD				1,074

Pengukuran 3

Abs adisi	C sampel	C adisi	C sampel – C adisi	C standar
0.683	0.7707	1.4079	0,6372	8
0.679	0.7624	1.3997	0,6372	8
0.681	0.7686	1.4038	0,6352	8
0.686	0.7707	1.4141	0,6434	8
0.684	0.7624	1.4100	0,6476	8
0.683	0.7686	1.4079	0,6393	8
Rata-rata				0,6400
SD				0,064
%RSD				0,752

Lampiran 14. Perhitungan Penetapan Kadar

Kukis berbahan dasar tepung mocaf							
Abs	Konsentrasi terukur $\mu\text{g/mL}$	FP	V pelarut	W sampel	FK	Kadar (mg)	% kadar
0,341	0,7026	400	50	100	1,0681	14,8955	14,90
0,343	0,7067	400	50	100	1,0681	14,9830	14,98
0,339	0,6985	400	50	100	1,0681	14,8081	14,81

Kukis berbahan dasar tepung terigu							
Abs	Konsentrasi terukur $\mu\text{g/mL}$	FP	V pelarut	W sampel	FK	Kadar (mg)	% kadar
0,422	0,8697	400	50	100	1,0681	18,4369	18,44
0,423	0,8717	400	50	100	1,0681	18,4806	18,48
0,420	0,8655	400	50	100	1,0681	18,3994	18,35

$$\% \text{ kadar} = \frac{\text{konsentrasi} \times \text{FP} \times \text{Vpelarut}}{\text{mg Samplel}} \times 100$$

$$\% \text{ kadar} = \frac{0,0007 \times 400 \times 50}{100} \times 100$$

$$\% \text{ kadar} = 14,90\%$$

Lampiran 15. Hasil cek plagiarisme

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Lampiran 16. Lembar Bimbingan

No	Tanggal	Dosen Pembimbing	Topik	Disetujui	Aksi
1	4 Maret 2025	apt. Purwaniati, M.Si.	pengolahan data uji hedonik	✓	 
1	19 Februari 2025	Emma Emawati, M.Si	mendiskusikan panellis untuk uji hedonik	✓	 
2	29 April 2025	apt. Purwaniati, M.Si.	progres penelitian	✓	 
2	23 Februari 2025	Emma Emawati, M.Si	mendiskusikan hasil uji hedonik	✓	 
3	16 Mei 2025	apt. Purwaniati, M.Si.	data pengamatan	✓	 
3	25 Mei 2025	Emma Emawati, M.Si	mendiskusikan data uji hedonik yang diulang	✓	 
4	13 Juni 2025	apt. Purwaniati, M.Si.	kemajuan 2	✓	 
4	4 Maret 2025	Emma Emawati, M.Si	pengolahan data uji hedonik	✓	 
5	25 Juni 2025	apt. Purwaniati, M.Si.	prosedur kerja akurasi	✓	 
5	10 Maret 2025	Emma Emawati, M.Si	panjang gelombang maksimum	✓	 
6	26 Juni 2025	apt. Purwaniati, M.Si.	pengamatan data	✓	 
6	9 April 2025	Emma Emawati, M.Si	analisis proksimat	✓	 
7	10 April 2025	Emma Emawati, M.Si	mendiskusikan prosedur kerja kadar air	✓	 
7	8 Juli 2025	apt. Purwaniati, M.Si.	revisi draft skripsi	✓	 
8	10 Juli 2025	apt. Purwaniati, M.Si.	revisi draft skripsi	✓	 
8	2 Mei 2025	Emma Emawati, M.Si	kemajuan 1	✓	 
9	5 Mei 2025	Emma Emawati, M.Si	proseddur kerja akurasi	✓	 

Lampiran 17. Daftar Riwayat Hidup

Nama : Salma Rachil Nurmanzilani
NPM : 211FF03090
Tempat Tanggal Lahir : Bandung, 25 September 2003
Agama : Islam
Gmail : rrachilsalmaa@gmail.com

Pendidikan:

1. SDIT Qordova (2009-2015)
2. SMP Plus Al-Aqsha (2015-2018)
3. MAN 2 Garut (2018-2021)
4. Universitas Bhakti Kencana (2021-2025)