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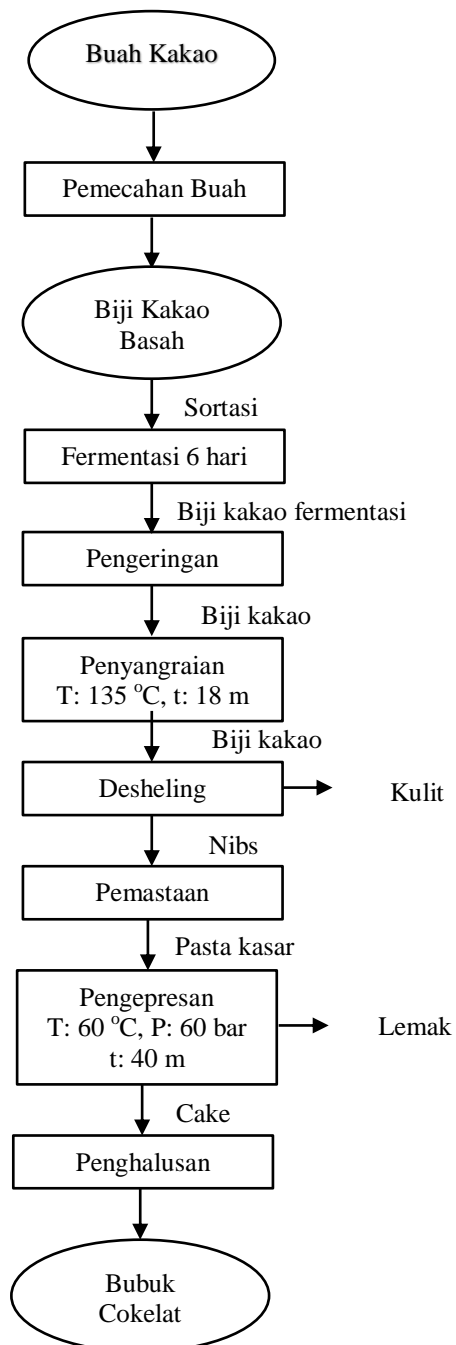
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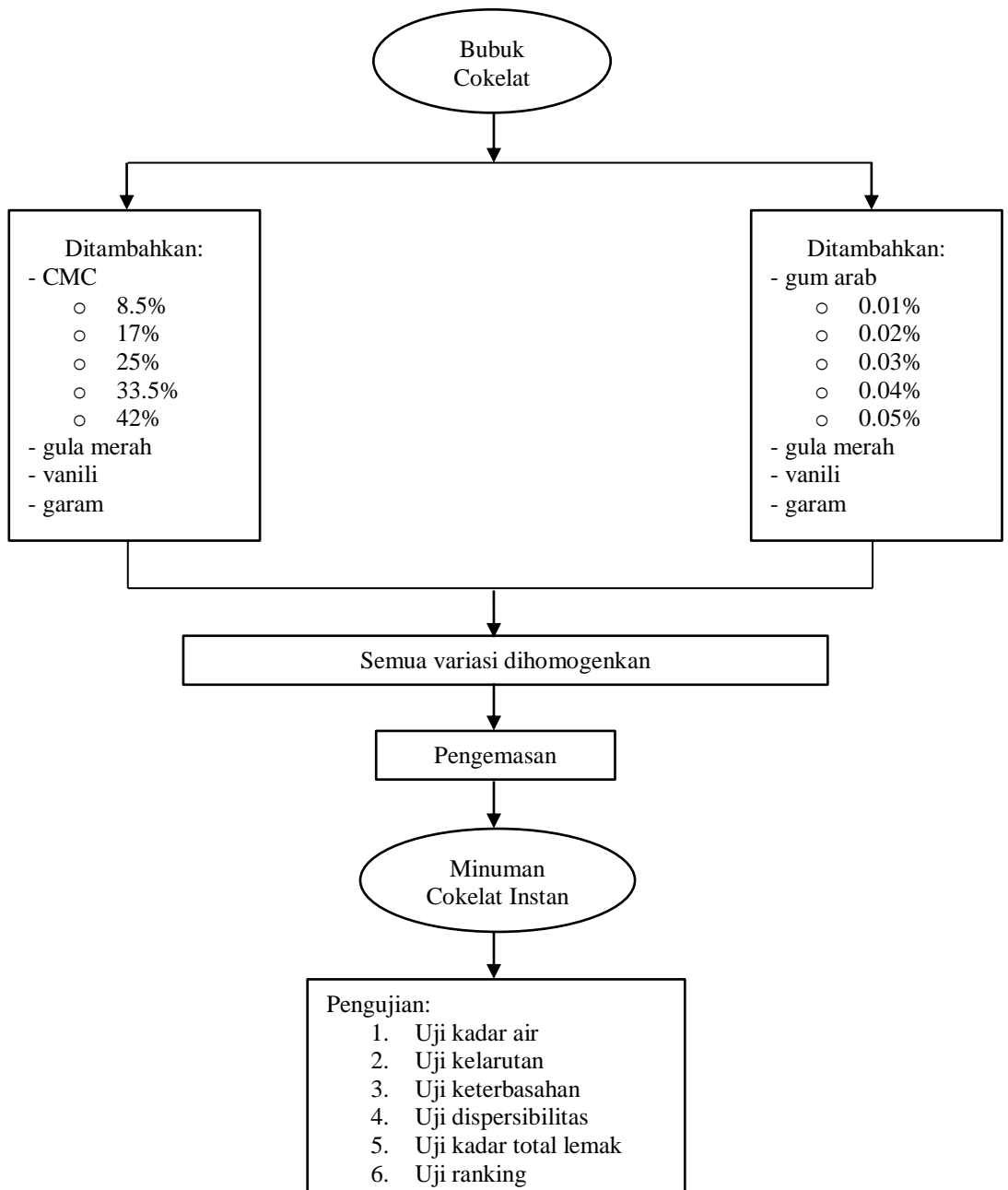
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LAMPIRAN

Lampiran 1. Diagram alir pembuatan cokelat bubuk



Lampiran 2. Diagram alir formulasi dan pengujian

Lampiran 3. Data pengujian keterbasahan minuman cokelat instan

Sampel	Keterbasahan (Detik)		Rata-rata
	Siplo	Duplo	
C1	494	493	493.5 ± 0.70 ^a
C2	485	1430	957 ± 668.21 ^{ab}
C3	1992	685	1338.5 ± 924.18 ^{ab}
C4	2065	814	1439.5 ± 884.59 ^{ab}
C5	1251	2409	1830 ± 818.83 ^b
G1	696	636	666 ± 42.42 ^{ab}
G2	521	550	535.5 ± 20.51 ^{ab}
G3	634	280	457 ± 250.31 ^a
G4	396	324	360 ± 50.91 ^a
G5	253	277	265 ± 645.87 ^a

ANOVA Uji Keterbasahan

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5104501.250	9	567166.806	2.010	.146
Within Groups	2821378.500	10	282137.850		
Total	7925879.750	19			

Duncan^a Uji Keterbasahan

Formula	N	Subset for alpha = 0.05	
		1	2
G5	2	265.0000	
G4	2	360.0000	
G3	2	457.0000	
C1	2	493.5000	
G2	2	535.5000	535.5000
G1	2	666.0000	666.0000
C2	2	957.5000	957.5000
C3	2	1338.5000	1338.5000
C4	2	1439.5000	1439.5000
C5	2		1830.0000
Sig.		.075	.051

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 2.000.

Lampiran 4. Data Pengujian dispersibilitas minuman coklat instan

Sampe l	Berat Cawan Kosong (g)		Berat Kertas Saring (g)		Berat Cwn+KS+Spl (g)		Berat Cwn+KS+Spl Kering (g)	
	Siplo	Duplo	Siplo	Duplo	Siplo	Duplo	Siplo	Duplo
	C1	90,1192	90,1185	1,227 1	1,254 3	91,8684	91,8956	91,4855
C2	50,2573	50,2514	1,227 1	1,290 2	52,0165	52,2796	51,6229	51,7034
C3	38,5608	38,5678	1,241 6	1,286 7	40,378	40,5501	39,9665	39,9752
C4	35,4156	35,4163	1,235 8	1,258 3	37,3001	37,4226	36,794	36,8411
C5	39,3043	39,305	1,253 9	1,253 7	41,2203	41,2239	40,7178	40,7183
G1	38,8587	38,8579	1,235 7	1,274 6	40,7658	40,6547	40,252	40,2589
G2	45,7978	45,7982	1,234 3	1,249 1	47,7234	47,759	47,1713	47,2412
G3	37,4402	37,4407	1,221 3	1,269 8	39,3982	39,4558	38,7985	38,8058
G4	40,571	40,5715	1,216	1,258 8	42,5415	42,5943	41,9285	41,9654
G5	35,1856	35,1862	1,224 3	1,249 5	37,1451	37,164	36,5525	36,5197

Lampiran 5. Data pengujian kelarutan minuman coklat instan

Sampel	Berat Cawan Kosong (g)		Berat Cawan+Sampel (g)		Berat Cawan+Sampel Kering (g)	
	Siplo	Duplo	Siplo	Duplo	Siplo	Duplo
C1	50,2585	90,1174	58,8087	98,7085	50,604	90,4756
C2	38,5627	50,255	47,4162	59,1273	38,879	50,5963
C3	39,3023	38,5032	47,8809	46,8326	39,527	39,0663
C4	35,4173	39,3241	44,6415	48,5612	35,6722	39,6643
C5	38,8591	35,4168	47,6417	45,0118	39,1001	35,9254
G1	90,1152	38,7239	98,9007	48,6838	90,4805	38,9753
G2	50,2675	50,2751	59,0987	60,0914	50,6846	50,6842
G3	38,5572	38,5538	47,6043	47,6743	38,9875	38,9521
G4	39,3073	39,5642	48,5092	48,7822	39,9274	40,0531
G5	35,4163	35,4317	45,1611	45,0957	36,2277	36,0228

Lampiran 6. Data pengujian kadar air minuman cokelat instan

Sampel	Kadar Air (m%)		Rata-rata
	Siplo	Duplo	
C1	5,3	4,4	4.85 ± 0.63 ^{ab}
C2	5,8	5,4	5.60 ± 0.28 ^{abc}
C3	6	5,5	5.75 ± 0.35 ^{bc}
C4	6,1	5,5	5.8 ± 0.42 ^{bc}
C5	6,6	5,5	6.05 ± 0.77 ^c
G1	4,9	4,2	4.55 ± 0.49 ^a
G2	4,5	4,8	4.65 ± 0.21 ^a
G3	4,6	4,5	4.55 ± 0.07 ^a
G4	4,4	4,6	4.50 ± 0.14 ^a
G5	4,1	4,9	4.50 ± 0.56 ^a

ANOVA Uji Kadar Air

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.302	9	.811	3.997	.021
Within Groups	2.030	10	.203		
Total	9.332	19			

Duncan^a Uji Kadar Air

Formula	N	Subset for alpha = 0.05		
		1	2	3
G4	2	4.5000		
G5	2	4.5000		
G3	2	4.5500		
G1	2	4.5500		
G2	2	4.6500		
C1	2	4.8500	4.8500	
C2	2	5.6000	5.6000	5.6000
C3	2		5.7500	5.7500
C4	2		5.8000	5.8000
C5	2			6.0500
Sig.		.052	.078	.373

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 2.000.

Lampiran 7. Data pengujian kadar lemak minuman cokelat instan

Sampel	Berat Kertas Saring+Penjepit (g)		Berat KS+Penjepit +Sampel (g)		Berat KS+Penjepit+Spl Kering (g)		Berat KS+Penjepit+Spl Soxlet (g)	
	Siplo	Duplo	Siplo	Duplo	Siplo	Duplo	Siplo	Duplo
C1	1,583	1,5757	3,5837	3,5739	3,4726	3,4354	3,2849	3,3062
C2	1,5959	1,574	3,5922	3,5773	3,4416	3,4132	3,2785	3,2655
C3	1,6239	1,5723	3,6264	3,5733	3,4897	3,4307	3,3181	3,2854
C4	1,593	1,5503	3,5945	3,5518	3,4397	3,3922	3,2805	3,2831
C5	1,6196	1,5815	3,6117	3,582	3,4613	3,4244	3,2596	3,2701
G1	1,5819	1,5516	3,5849	3,5525	3,4576	3,4133	3,2891	3,2433
G2	1,5764	1,5732	3,5772	3,5752	3,4491	3,4382	3,3643	3,3027
G3	1,591	1,5682	3,5944	3,5678	3,4629	3,4263	3,3421	3,2684
G4	1,5778	1,5702	3,5783	3,5715	3,4498	3,4289	3,3785	3,2723
G5	1,5937	1,5767	3,5974	3,5761	3,4632	3,4319	3,4065	3,3028

Lampiran 8. Lembar kuisisioner evaluasi sensori

UJI RANKING

Nama : _____ Tanggal : _____
 Jenis sampel : Minuman cokelat instan
 Atribut : Aroma, rasa, kekentalan

Instruksi:

1. Di hadapan Anda terdapat sampel minuman cokelat instan.
2. Ujilah sampel secara berurutan dari kiri ke kanan.
3. Pengujian hanya diperbolehkan satu kali dan tidak diperbolehkan mengulang pengujian.
4. Lakukan pengujian atribut aroma terlebih dahulu, setelah itu lanjutkan dengan pengujian atribut rasa dengan pencicipan.
5. Nyatakan penilaian anda dan berikan skor (skala 1-5) seperti yang tercantum di bawah tabel, sesuai dengan penilaian anda.

Kode Sampel	Karakteristik		
	Aroma	Rasa	Kekentalan
375			
243			
137			
431			
218			
155			
256			
364			
297			
221			

Skala Penilaian:

- 1 = Sangat tidak suka
- 2 = Tidak suka
- 3 = Netral
- 4 = Suka
- 5 = Sangat suka

Lampiran 9. Data hasil uji ranking atribut aroma

Panelis	Sampel									
	C1	C2	C3	C4	C5	G1	G2	G3	G4	G5
Panelis 1	4	4	3	4	4	5	4	4	4	5
Panelis 2	5	4	4	5	4	5	4	4	4	5
Panelis 3	4	4	4	4	4	4	4	4	5	3
Panelis 4	4	4	4	4	4	4	4	3	5	4
Panelis 5	5	5	5	5	5	5	5	5	5	5
Panelis 6	5	5	5	5	4	5	4	4	5	5
Panelis 7	4	4	4	4	4	4	4	4	4	4
Panelis 8	5	4	4	5	5	5	4	5	4	5
Panelis 9	4	4	4	4	4	4	4	4	4	4
Panelis 10	4	4	5	4	4	4	3	3	4	4
Panelis 11	4	4	4	5	4	4	4	4	4	3
Panelis 12	4	4	4	4	4	5	4	4	5	4
Panelis 13	4	4	3	4	5	5	5	5	5	4
Panelis 14	3	4	5	4	4	3	3	5	5	4
Panelis 15	3	4	4	4	5	4	4	5	4	3
Panelis 16	4	4	4	3	5	4	4	4	4	4
Panelis 17	3	5	4	4	5	5	4	4	3	4
Panelis 18	4	5	4	4	4	5	5	4	4	4
Panelis 19	3	3	3	3	4	4	5	4	4	4
Panelis 20	3	5	4	3	4	5	5	4	4	4
Panelis 21	3	4	5	4	4	4	4	5	4	3

Sampel	Nilai Rata-Rata Aspek Aroma
C1	3.9048 ± 0.70 ^a
C2	4.1905 ± 0.51 ^{ab}
C3	4.0952 ± 0.62 ^{ab}
C4	4.0952 ± 0.62 ^{ab}
C5	4.2857 ± 0.46 ^{ab}
G1	4.4286 ± 0.59 ^b
G2	4.1429 ± 0.57 ^{ab}
G3	4.1905 ± 0.60 ^{ab}
G4	4.2857 ± 0.56 ^{ab}
G5	4.0476 ± 0.67 ^{ab}

ANOVA Uji Rangka Aroma

		Sum of Squares	df	Mean Square	F	Sig.
Aspek Aroma	Between Groups	4.024	9	.447	1.257	.263
	Within Groups	71.143	200	.356		
	Total	75.167	209			

Duncan^a Aspek Aroma

Formula	N	Subset for alpha = 0.05	
		1	2
C1	21	3.9048	
G5	21	4.0476	4.0476
C3	21	4.0952	4.0952
C4	21	4.0952	4.0952
G2	21	4.1429	4.1429
C2	21	4.1905	4.1905
G3	21	4.1905	4.1905
C5	21	4.2857	4.2857
G4	21	4.2857	4.2857
G1	21		4.4286
Sig.		.082	.082

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 21.000.

Test Statistics^a

N	21
Chi-square	13.382
df	9
Asymp. Sig.	.146

a. Friedman Test

Lampiran 10. Data hasil uji ranking atribut rasa

Panelis	Sampel									
	C1	C2	C3	C4	C5	G1	G2	G3	G4	G5
Panelis 1	4	4	3	2	2	3	3	3	2	2
Panelis 2	4	3	2	3	3	4	3	2	2	1
Panelis 3	4	3	4	3	2	4	3	1	2	1
Panelis 4	3	4	2	3	1	3	4	1	1	1
Panelis 5	3	4	4	2	4	5	4	2	4	4
Panelis 6	4	4	3	3	2	4	3	3	4	1
Panelis 7	4	3	2	3	2	3	4	1	2	1
Panelis 8	3	3	3	3	4	3	3	3	1	1
Panelis 9	3	2	4	3	3	4	4	4	4	3
Panelis 10	3	3	3	4	3	4	4	2	4	3
Panelis 11	3	4	4	4	2	5	3	2	3	4
Panelis 12	4	4	3	2	4	4	4	1	4	2
Panelis 13	4	3	4	3	2	4	4	2	4	2
Panelis 14	3	3	3	3	3	3	3	3	3	4
Panelis 15	4	4	4	3	4	3	4	3	4	1
Panelis 16	4	3	4	2	2	3	3	2	3	2
Panelis 17	3	3	3	4	2	3	4	3	3	3
Panelis 18	4	3	2	4	4	3	3	2	1	3
Panelis 19	3	3	4	3	3	3	3	3	2	2
Panelis 20	3	3	3	3	2	4	4	3	4	2
Panelis 21	4	3	4	3	2	3	3	2	3	2

Sampel	Nilai Rata-Rata Aspek Rasa
C1	3.5238 ± 0.51 ^{ef}
C2	3.2857 ± 0.56 ^{def}
C3	3.2381 ± 0.76 ^{def}
C4	3.0000 ± 0.63 ^{cde}
C5	2.6667 ± 0.91 ^{bc}
G1	3.5714 ± 0.67 ^f
G2	3.4762 ± 0.51 ^{ef}
G3	2.2857 ± 0.84 ^{ab}
G4	2.8571 ± 1.10 ^{cd}
G5	2.1429 ± 1.06 ^a

ANOVA Uji Ranking Rasa

		Sum of Squares	df	Mean Square	F	Sig.
Aspek Rasa	Between Groups	49.186	9	5.465	8.828	.000
	Within Groups	123.810	200	.619		
	Total	172.995	209			

Duncan^a Aspek Rasa

Formula	N	Subset for alpha = 0.05					
		1	2	3	4	5	6
G5	21	2.1429					
G3	21	2.2857	2.2857				
C5	21		2.6667	2.6667			
G4	21			2.8571	2.8571		
C4	21			3.0000	3.0000	3.0000	
C3	21				3.2381	3.2381	3.2381
C2	21				3.2857	3.2857	3.2857
G2	21					3.4762	3.4762
C1	21					3.5238	3.5238
G1	21						3.5714
Sig.		.557	.118	.198	.109	.054	.229

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 21.000.

Test Statistics^a

N	21
Chi-square	55.328
df	9
Asymp. Sig.	.000

a. Friedman Test

Lampiran 11. Data hasil uji ranking atribut kekentalan

Panelis	Sampel									
	C1	C2	C3	C4	C5	G1	G2	G3	G4	G5
Panelis 1	4	3	3	4	3	4	3	3	2	2
Panelis 2	3	3	3	3	3	4	3	3	3	3
Panelis 3	3	3	3	4	3	4	4	1	3	3
Panelis 4	3	4	2	4	2	4	3	3	2	2
Panelis 5	3	4	4	3	3	4	5	2	4	3
Panelis 6	4	3	3	3	2	3	4	2	4	1
Panelis 7	3	4	4	3	2	4	4	1	1	1
Panelis 8	3	3	3	2	4	3	3	2	1	1
Panelis 9	3	3	3	3	3	3	3	3	4	4
Panelis 10	3	3	4	3	3	3	4	2	3	3
Panelis 11	3	4	4	5	4	5	3	4	4	4
Panelis 12	4	4	3	3	3	3	4	1	3	2
Panelis 13	3	3	4	4	1	3	3	2	2	2
Panelis 14	3	3	4	3	4	3	3	2	3	4
Panelis 15	3	4	3	2	4	4	4	3	4	2
Panelis 16	4	3	4	3	2	3	3	2	3	2
Panelis 17	3	3	3	2	2	3	3	3	3	3
Panelis 18	4	4	4	3	3	4	4	1	1	2
Panelis 19	3	3	3	3	3	3	3	2	3	2
Panelis 20	3	4	5	2	3	3	4	2	2	3
Panelis 21	4	3	5	3	2	3	3	2	3	3

Sampel	Nilai Rata-Rata Aspek Kekentalan
C1	3.2857 ± 0.46^d
C2	3.3810 ± 0.49^d
C3	3.5238 ± 0.74^d
C4	$3.0952 \pm 0.76^c^d$
C5	2.8095 ± 0.81^{bc}
G1	3.4762 ± 0.60^d
G2	3.4762 ± 0.60^d
G3	2.1905 ± 0.81^a
G4	2.7619 ± 0.99^{bc}
G5	2.4762 ± 0.92^{ab}

ANOVA Uji Kekentalan

		Sum of Squares	df	Mean Square	F	Sig.
Aspek Kekentalan	Between Groups	41.238	9	4.582	8.309	.000
	Within Groups	110.286	200	.551		
	Total	151.524	209			

Duncan^a Aspek Kekentalan

Formula	N	Subset for alpha = 0.05			
		1	2	3	4
G3	21	2.1905			
G5	21	2.4762	2.4762		
G4	21		2.7619	2.7619	
C5	21		2.8095	2.8095	
C4	21			3.0952	3.0952
C1	21				3.2857
C2	21				3.3810
G1	21				3.4762
G2	21				3.4762
C3	21				3.5238
Sig.		.214	.172	.172	.104

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 21.000.

Test Statistics^a

N	21
Chi-square	53.499
df	9
Asymp. Sig.	.000

a. Friedman Test

Lampiran 12. Perhitungan penentuan nilai dispersibilitas

$$\text{Dispersibilitas (\%)} = \frac{(10+a)x \%TS}{a x (100-b)} \times 100$$

Keterangan:

a = jumlah sampel yang diambil (g)

b = kadar air dalam sampel

%TS = persentase bahan kering dalam bubuk yang dilarutkan setelah melewati saringan

- Sampel C1 (Siplo)

$$\begin{aligned} \text{Dispersibilitas (\%)} &= \frac{(10+a)x \%TS}{a x (100-b)} \times 100 \\ &= \frac{(10+0.5221)x 38.29}{0.5221 x (100-0.4168)} \times 100 \\ &= 7.75 \% \end{aligned}$$

Sampel	Dispersibilitas (%)		Rata-rata
	Siplo	Duplo	
C1	7.75	8.26	8.00 ± 0.36 ^a
C2	7.85	8.48	8.16 ± 0.44 ^{ab}
C3	7.64	8.97	8.30 ± 0.94 ^{ab}
C4	8.42	8.49	8.45 ± 0.05 ^{ab}
C5	8.19	8.21	8.20 ± 0.01 ^{ab}
G1	8.27	8.05	8.16 ± 0.15 ^{ab}
G2	8.64	7.88	8.26 ± 0.53 ^{ab}
G3	8.88	9.53	9.20 ± 0.46 ^b
G4	8.87	8.99	8.93 ± 0.08 ^{ab}
G5	8.79	9.66	9.22 ± 0.61 ^b

ANOVA Uji Dispersibilitas

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.734	9	.415	1.952	.156
Within Groups	2.126	10	.213		
Total	5.860	19			

Duncan^a Uji Dispersibilitas

Formula	N	Subset for alpha = 0.05	
		1	2

C1	2	8.0050	
G1	2	8.1600	8.1600
C2	2	8.1650	8.1650
C5	2	8.2000	8.2000
G2	2	8.2600	8.2600
C3	2	8.3050	8.3050
C4	2	8.4550	8.4550
G4	2	8.9300	8.9300
G3	2		9.2050
G5	2		9.2250
Sig.		.100	.065

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 2.000.

Lampiran 13. Perhitungan penentuan nilai kelarutan

$$\text{Kelarutan} = \frac{\text{berat endapan kering (g)}}{\text{volume supernatan (ml)}} \times 100 \%$$

- Sampel C1 (Siplo)

$$\begin{aligned} \text{Kelarutan} &= \frac{(50.604 - 50.2585) \text{ g}}{10 \text{ ml}} \times 100 \% \\ &= 3.5 \% \end{aligned}$$

Sampel	Kelarutan (%)		Rata-rata
	Siplo	Duplo	
C1	3.5	3.6	3.55 ± 0.07 ^{ab}
C2	3.2	3.4	3.30 ± 0.14 ^{ab}
C3	2.2	5.6	3.90 ± 2.40 ^{ab}
C4	2.5	3.4	2.95 ± 0.63 ^a
C5	2.4	5.1	3.75 ± 1.91 ^{ab}
G1	3.7	2.5	3.10 ± 0.84 ^{ab}
G2	4.2	4.1	4.15 ± 0.07 ^{ab}
G3	4.8	4.4	4.60 ± 0.28 ^{abc}
G4	6.7	5.3	6.00 ± 0.99 ^{bc}
G5	8.3	6.1	7.20 ± 1.55 ^c

ANOVA Uji Kelarutan

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	33.350	9	3.706	2.636	.074
Within Groups	14.060	10	1.406		
Total	47.410	19			

Duncan ^a Uji Kelarutan				
Formula	N	Subset for alpha = 0.05		
		1	2	3
C4	2	2.9500		
G1	2	3.1000	3.1000	
C2	2	3.3000	3.3000	
C1	2	3.5500	3.5500	
C5	2	3.7500	3.7500	
C3	2	3.9000	3.9000	
G2	2	4.1500	4.1500	
G3	2	4.6000	4.6000	4.6000
G4	2		6.0000	6.0000
G5	2			7.2000
Sig.		.232	.053	.062

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 2.000.

Lampiran 14. Perhitungan penentuan nilai kadar lemak

$$\text{Kadar Lemak (\%)} = \frac{W_3 - W_2}{W_1} \times 100 \%$$

Keterangan: W1 = Berat sampel (g)

W2 = Berat labu lemak tanpa lemak (g)

W3 = Berat labu lemak dengan lemak (g)

- Sampel C1 (Siplo)

$$\text{Kadar Lemak (\%)} = \frac{(3.4726 - 3.2849)g}{(3.5837 - 1.583)g} \times 100 \%$$

$$= 9.38 \%$$

Sampel	Kadar Lemak (%)		Rata-rata
	Siplo	Duplo	
C1	9.38	6.47	7.92 ± 2.06 ^a
C2	8.17	7.37	7.77 ± 0.56 ^a
C3	8.57	7.26	7.92 ± 0.93 ^a
C4	7.95	5.45	6.70 ± 1.77 ^a
C5	10.12	7.71	8.92 ± 1.70 ^a
G1	8.41	8.50	8.45 ± 0.06 ^a
G2	4.24	6.77	5.50 ± 1.79 ^a
G3	6.03	7.90	6.96 ± 1.32 ^a
G4	3.56	7.82	5.69 ± 3.01 ^a
G5	2.83	6.46	4.64 ± 2.57 ^a

ANOVA Uji Kadar Lemak

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	35.270	9	3.919	1.222	.377
Within Groups	32.056	10	3.206		
Total	67.326	19			

Duncan^a Uji Kadar Lemak

Formula	N	Subset for alpha
		= 0.05
		1
G5	2	4.6450
G2	2	5.5050
G4	2	5.6900
C4	2	6.7000
G3	2	6.9650
C2	2	7.7700
C3	2	7.9150
C1	2	7.9250
G1	2	8.4550
C5	2	8.9150
Sig.		.058

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 2.000.

Lampiran 15. Dokumentasi





