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LAMPIRAN

Lampiran 1 Analisis Fisik

A. Uji Viskositas

Pengukuran kekentalan sediaan sampo dengan menggunakan alat viskometer. Uji ini dilakukan untuk mengetahui karakteristik fisik sediaan sampo.

Cara kerja:

- a. Masukkan sampel ke dalam gelas ukur 50 ml
- b. Masukkan spindle viskometer ke dalam sampel sampai batas
- c. Jalankan viskometer sampai viskometer menunjuk nilai yang konstan
- d. Catat nilai konstan yang dihasilkan.

B. Uji pH

Untuk mengetahui tingkat keasaman sediaan sampo sesuai dengan standar.

Cara kerja:

- a. Larutkan 5 ml sediaan sampo dengan 50 ml air
- b. Kalibrasi pH meter dengan larutan pH 7 (dapar fosfat ekimolal) dan pH (dapar kalium biftalat)
- c. Celupkan elektroda pH-meter ke dalam sediaan sampo hingga ujung elektroda tercelup semua

- d. Tunggu hingga angka yang terbaca menjadi stabil
- e. Catat angka yang menunjukkan nilai pH tersebut.

C. Uji Bobot Jenis

Pengukuran berat jenis untuk mengetahui tegangan permukaan dan kestabilan sediaan sampo.

Cara kerja:

- a. Ditimbang piknometer kosong (A) dan piknometer berisi air suling (B).
- b. Menimbang piknometer berisi sediaan sampo (C)
- c. Hitung bobot jenis sediaan sampo dengan rumus berikut dan catat hasilnya:

$$\text{Bobot Jenis} = \frac{\text{berat piknometer sampel} - \text{berat piknometer kosong}}{\text{berat piknometer aquadest} - \text{berat piknometer kosong}}$$

D. Uji Tinggi Busa

Pengukuran tinggi busa dilakukan untuk pengendalian mutu sediaan sampo agar memiliki kemampuan yang sesuai dalam menghasilkan busa.

Cara kerja:

- a. Disiapkan sediaan sampo sebanyak 5 ml dilarutkan dalam 50 ml air

- b. Masukkan ke dalam gelas ukur tertutup 100 ml dan di kocok selama 20 detik dengan cara membalikkan gelas ukur secara beraturan
- c. Ukur tinggi busa yang terbentuk
- d. Didiamkan selama 5 menit lalu ukur kembali tinggi busa dan catat hasilnya.

E. Kadar Air

Pengukuran kadar air dilakukan untuk mengetahui fisik dari sampo yang berpengaruh pada daya simpan sediaan sampo.

Cara kerja:

- a. Siapkan sediaan sampo 2 ml dalam cawan yang telah ditimbang beratnya
- b. Masukkan cawan petri beserta sediaan sampo ke dalam oven dengan suhu 103-105°C selama 3-5 jam
- c. Setelah dipanaskan, dinginkan cawan petri dan sampel sampo di dalam desikator
- d. Timbang cawan petri beserta sediaan sampo setelah didinginkan, lalu hitung kadar air dan catat hasilnya

$$\text{Kadar air} = \frac{\text{berat awal} - \text{berat akhir}}{\text{berat awal}} \times 100\%$$

Lampiran 2 Hasil Pengolahan Data

A. Uji Viskositas

$$\begin{aligned} GT &= X_{1.1} + X_{1.2} + X_{1.3} + \dots + X_{n.m} \\ &= 410,6 + 565,2 + 506,1 + \dots + 336,7 = 8982,3 \end{aligned}$$

$$\begin{aligned} Fk &= \Sigma \frac{GT^2}{r \times a \times b} = \frac{8982,3^2}{2 \times 3 \times 3} = \frac{80681713,29}{18} \\ &= 4482317,405 \end{aligned}$$

$$\begin{aligned} JK \text{ Total} &= (X_{1.1}^2 + X_{1.2}^2 + X_{1.3}^2 + \dots + X_{n.m}^2) - FK \\ &= (410,6^2 + 565,2^2 + 506,1^2 + \dots + 336,7^2) - 4482317,405 \\ &= 4581923,77 - 4482317,405 \\ &= 99606,365 \end{aligned}$$

JK Blok

$$= \frac{\Sigma R_1^2 + \Sigma R_2^2 + \dots + \Sigma R_k^2}{k} - FK$$

– FK

$$\begin{aligned} &= \frac{4581923,77}{9} \\ &\quad - 4482317,405 \\ &= 557568,000 \end{aligned}$$

JK Perlakuan

$$= \frac{\Sigma (A_1 B_1)^2 + \Sigma (A_1 B_2)^2 + \dots + \Sigma (A_k B_k)^2}{k} - FK$$

– FK

$$= \frac{80681713,29}{2} - 4482317,405$$

$$= 49803,1825$$

$$\begin{aligned} \text{JK Error} &= \text{JK Total} - \text{JK Perlakuan} - \text{JK Blok} \\ &= 99606,365 - 49803,1825 - 557568,000 \\ &= 2590510,000 \end{aligned}$$

JK A

$$= \frac{\sum (A \frac{2}{1} + A \frac{2}{2} + \dots + A \frac{2}{n})}{r \times b}$$

– FK

$$\begin{aligned} &= \frac{26924202,35}{6} - 4482317,405 \\ &= 66953,444 \end{aligned}$$

JK B

$$= \frac{\sum (B \frac{2}{1} + B \frac{2}{2} + \dots + B \frac{2}{n})}{r \times a}$$

– FK

$$\begin{aligned} &= \frac{26914131,77}{6} - 4482317,405 \\ &= 3153253,444 \end{aligned}$$

$$\begin{aligned} \text{JK AxB} &= \text{JK Perlakuan} - \text{JK A} - \text{JK B} \\ &= 49803,1825 - 66953,444 - 3153253,444 \\ &= 894494,22 \end{aligned}$$

Tests of Between-Subjects Effects

Dependent Variable: Viskositas

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4672269,111 ^a	9	519141,012	1,603	,259
Intercept	465653816,89	1	465653816,89	1438,030	<,001
CB_MSM	66953,444	2	33476,722	,103	,903
SCI	3153253,444	2	1576626,722	4,869	,041
Ulangan	557568,000	1	557568,000	1,722	,226
CB_MSM * SCI	894494,222	4	223623,556	,691	,619
Error	2590510,000	8	323813,750		

Viskositas

Duncan^{a,b}

Sodium Cocoyl Isethionate	N	Subset	
		1	2
B1 (5%)	6	4494,333	
B3 (7%)	6		5377,500
B2 (6%)	6		5386,833
Sig.		1,000	,978

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 323813,750.

a. Uses Harmonic Mean Sample Size = 6,000.

b. Alpha = 0,05.

B. Uji pH

$$\begin{aligned}
 GT &= X_{1.1} + X_{1.2} + X_{1.3} + \dots + X_{n.m} \\
 &= 4,85 + 4,82 + 4,84 + \dots + 5,52 = 92,06
 \end{aligned}$$

$$\begin{aligned}
 Fk &= \Sigma \frac{GT^2}{r \times a \times b} = \frac{92,06^2}{2 \times 3 \times 3} = \frac{8475,0436}{18} \\
 &= 470,8357
 \end{aligned}$$

$$\begin{aligned}
 JK \text{ Total} &= (X_{1.1}^2 + X_{1.2}^2 + X_{1.3}^2 + \dots + X_{n.m}^2) - FK \\
 &= (4,85^2 + 4,82^2 + 4,84^2 + \dots + 5,52^2) - 470,8357 \\
 &= 473,7186 - 470,8357
 \end{aligned}$$

$$= 2,8829$$

JK Blok

$$= \frac{\sum R_1^2 + \sum R_2^2 + \dots + \sum R_r^2}{b} - FK$$

– FK

$$= \frac{473,7186}{9}$$

$$- 470,8357$$

$$= 338,000$$

JK Perlakuan

$$= \frac{\sum (A_1 B_1)^2 + \sum (A_1 B_2)^2 + \dots + \sum (A_r B_b)^2}{b} - FK$$

– FK

$$= \frac{8475,0436}{2} - 470,8357$$

$$= 2,0122$$

$$JK \text{ Error} = JK \text{ Total} - JK \text{ Perlakuan} - JK \text{ Blok}$$

$$= 2,8829 - 2,0122 - 338,000$$

$$= 23876,000$$

JK A

$$= \frac{\sum (A_1^2 + A_2^2 + \dots + A_n^2)}{r \times b} - FK$$

– FK

$$= \frac{2826,7214}{6} - 470,8357$$

$$= 2654,111$$

JK B

$$= \frac{\sum (B_1^2 + B_2^2 + \dots + B_n^2)}{r \times a}$$

– FK

$$= \frac{2827,5606}{6} - 470,8357$$

$$= 571,444$$

JK AxB = *JK Perlakuan* – *JK A* – *JK B*

$$= 2,0122 - 2654,111 - 571,444$$

$$= 1388,889$$

Tests of Between-Subjects Effects

Dependent Variable: pH

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4952,444 ^a	9	550,272	,184	,990
Intercept	4708357,556	1	4708357,556	1577,603	<,001
CB_MSM	2654,111	2	1327,056	,445	,656
SCI	571,444	2	285,722	,096	,910
Ulangan	338,000	1	338,000	,113	,745
CB_MSM * SCI	1388,889	4	347,222	,116	,973
Error	23876,000	8	2984,500		
Total	4737186,000	18			
Corrected Total	28828,444	17			

a. R Squared = ,172 (Adjusted R Squared = -,760)

C. Uji Bobot Jenis

$$GT = X_{1,1} + X_{1,2} + X_{1,3} + \dots + X_{n,m}$$

$$= 1,08 + 1,07 + 1,06 + \dots + 1,07 = 19,44$$

$$Fk = \sum \frac{GT^2}{r \times a \times b} = \frac{19,44^2}{2 \times 3 \times 3} = \frac{377,9136}{18}$$

$$= 20,9952$$

$$\begin{aligned} JK \text{ Total} &= (X_{1.1}^2 + X_{1.2}^2 + X_{1.3}^2 + \dots + X_{n.m}^2) - FK \\ &= (1,08^2 + 1,07^2 + 1,06^2 + \dots + 1,07^2) - 20,9952 \\ &= 20,998 - 20,9952 \\ &= 0,0028 \end{aligned}$$

JK Blok

$$= \frac{\sum R1^2 + \sum R2^2 + \dots + \sum Rn^2}{n} - FK$$

$$= \frac{20,998}{9} - 20,9952$$

$$= 2090,889$$

JK Perlakuan

$$= \frac{\sum (A1B1)^2 + \sum (A1B2)^2 + \dots + \sum (A1Bn)^2}{n} - FK$$

$$= \frac{20,998}{2} - 20,9952$$

$$= 0,0014$$

$$\begin{aligned} JK \text{ Error} &= JK \text{ Total} - JK \text{ Perlakuan} - JK \text{ Blok} \\ &= 0,0028 - 0,0014 - 2090,889 \\ &= 7127,111 \end{aligned}$$

JK A

$$= \frac{\sum (A_1^2 + A_2^2 + \dots + A_n^2)}{r \times b}$$

– FK

$$= \frac{125,9718}{6} - 20,9952$$

$$= 16641,333$$

JK B

$$= \frac{\sum (B_1^2 + B_2^2 + \dots + B_n^2)}{r \times a}$$

– FK

$$= \frac{125,975}{6} - 20,9952$$

$$= 1089,333$$

JK AxB = JK Perlakuan – JK A – JK B

$$= 0,0014 - 16641,333 - 1089,333$$

$$= 1987,33$$

Tests of Between-Subjects Effects

Dependent Variable: Bobot Jenis

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	21808,889 ^a	9	2423,210	2,720	,087
Intercept	133128,000	1	133128,000	149,433	<,001
CB_MSM	16641,333	2	8320,667	9,340	,008
SCI	1089,333	2	544,667	,611	,566
Ulangan	2090,889	1	2090,889	2,347	,164
CB_MSM * SCI	1987,333	4	496,833	,558	,700
Error	7127,111	8	890,889		
Total	162064,000	18			
Corrected Total	28936,000	17			

a. R Squared = ,754 (Adjusted R Squared = ,477)

Bobot Jenis

Duncan^{a,b}

Cocoa Butter : Minyak Sawit Merah		Subset	
	N	1	2
A3 (1:3)	6	43,0000	
A2 (2:2)	6		107,3333
A1 (3:1)	6		107,6667
Sig.		1,000	,985

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 890,889.

a. Uses Harmonic Mean Sample Size = 6,000.

b. Alpha = ,05.

D. Uji Tinggi Busa

$$\begin{aligned}
 GT &= X_{1.1} + X_{1.2} + X_{1.3} + \dots + X_{n.m} \\
 &= 16,67 + 18,19 + 23,08 + \dots + 30,77 = 363,23
 \end{aligned}$$

$$\begin{aligned}
 Fk &= \Sigma \frac{GT^2}{r \times a \times b} = \frac{363,23^2}{2 \times 3 \times 3} = \frac{131936,0329}{18} \\
 &= 7329,7796
 \end{aligned}$$

$$\begin{aligned}
 JK \text{ Total} &= (X_{1.1}^2 + X_{1.2}^2 + X_{1.3}^2 + \dots + X_{n.m}^2) - FK \\
 &= (16,67^2 + 18,19^2 + 23,08^2 + \dots + 30,77^2) - 7329,7796 \\
 &= 8459,6523 - 7329,7796 \\
 &= 1129,8727
 \end{aligned}$$

JK Blok

$$= \frac{\Sigma R1^2 + \Sigma R2^2 + \dots}{\dots}$$

– FK

$$\begin{aligned}
&= \frac{8459,6523}{9} \\
&\quad - 7329,7796 \\
&= 578,000
\end{aligned}$$

JK Perlakuan

$$\begin{aligned}
&= \frac{\sum(A1B1)^2 + \sum(A1B2)^2 + \dots + \sum(A1Bn)^2}{r \times b} \\
&\quad - FK \\
&= \frac{8459,6523}{2} - 7329,7796 \\
&= 564,9363
\end{aligned}$$

$$\begin{aligned}
JK \text{ Error} &= JK \text{ Total} - JK \text{ Perlakuan} - JK \text{ Blok} \\
&= 1129,8727 - 564,9363 - 578,000 \\
&= 32518,000
\end{aligned}$$

JK A

$$\begin{aligned}
&= \frac{\sum(A \frac{2}{1} + A \frac{2}{2} + \dots + A \frac{2}{n})^2}{r \times b} \\
&\quad - FK \\
&= \frac{44304,8641}{6} - 7329,7796 \\
&= 6339,000
\end{aligned}$$

JK B

$$\begin{aligned}
&= \frac{\sum(B \frac{2}{1} + B \frac{2}{2} + \dots + B \frac{2}{n})^2}{r \times a} \\
&\quad - FK
\end{aligned}$$

$$= \frac{44141,2721}{6} - 7329,7796$$

$$= 1506,333$$

$$\text{JK AxB} = \text{JK Perlakuan} - \text{JK A} - \text{JK B}$$

$$= 564,9363 - 6339,000 - 1506,333$$

$$= 7046,667$$

Tests of Between-Subjects Effects

Dependent Variable: Tinggi Busa T = 0

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	15470,000 ^a	9	1718,889	,423	,889
Intercept	34848,000	1	34848,000	8,573	,019
CB_MSM	6339,000	2	3169,500	,780	,490
SCI	1506,333	2	753,167	,185	,834
Ulangan	578,000	1	578,000	,142	,716
CB_MSM * SCI	7046,667	4	1761,667	,433	,781
Error	32518,000	8	4064,750		
Total	82836,000	18			
Corrected Total	47988,000	17			

a. R Squared = ,322 (Adjusted R Squared = -,440)

Tests of Between-Subjects Effects

Dependent Variable: Tinggi Busa T = 5

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	5747,111 ^a	9	638,568	,599	,770
Intercept	7040,889	1	7040,889	6,600	,033
CB_MSM	100,778	2	50,389	,047	,954
SCI	1694,111	2	847,056	,794	,485
Ulangan	128,000	1	128,000	,120	,738
CB_MSM * SCI	3824,222	4	956,056	,896	,509
Error	8534,000	8	1066,750		
Total	21322,000	18			
Corrected Total	14281,111	17			

a. R Squared = ,402 (Adjusted R Squared = -,270)

E. Kadar Air

$$\begin{aligned} GT &= X_{1.1} + X_{1.2} + X_{1.3} + \dots + X_{n,m} \\ &= 72,27 + 94,34 + 60,04 + \dots + 48,05 = 1337,79 \end{aligned}$$

$$\begin{aligned} Fk &= \Sigma \frac{GT^2}{r \times a \times x \times b} = \frac{1337,79^2}{2 \times 3 \times 3 \times 3} = \frac{1789682,0841}{18} \\ &= 99426,7824 \end{aligned}$$

$$\begin{aligned} JK \text{ Total} &= (X_{1.1}^2 + X_{1.2}^2 + X_{1.3}^2 + \dots + X_{n,m}^2) - FK \\ &= (72,27^2 + 94,34^2 + 60,04^2 + \dots + 48,05^2) - 99426,7824 \\ &= 105641,5355 - 99426,7824 \\ &= 6214,7531 \end{aligned}$$

JK Blok

$$= \frac{\Sigma R_1^2 + \Sigma R_2^2 + \dots + \Sigma R_k^2}{n}$$

– FK

$$\begin{aligned} &= \frac{105641,5355}{9} \\ &\quad - 99426,7824 \\ &= 2656512,500 \end{aligned}$$

JK Perlakuan

$$= \frac{\Sigma (A_1 B_1)^2 + \Sigma (A_1 B_2)^2 + \dots + \Sigma (A_k B_k)^2}{n}$$

– FK

$$= \frac{1789682,0841}{2} - 99426,7824$$

$$= 46606,0147$$

$$JK \text{ Error} = JK \text{ Total} - JK \text{ Perlakuan} - JK \text{ Blok}$$

$$= 6214,7531 - 36,181 - 2656512,500$$

$$= 1812937,000$$

JK A

$$= \frac{\sum (A_1^2 + A_2^2 + \dots + A_n^2)}{r \times b}$$

– FK

$$= \frac{597035,4011}{6} - 99426,7824$$

$$= 1065232,444$$

JK B

$$= \frac{\sum (B_1^2 + B_2^2 + \dots + B_n^2)}{r \times a}$$

– FK

$$= \frac{608616,1209}{6} - 99426,7824$$

$$= 2876152,444$$

$$JK \text{ AxB} = JK \text{ Perlakuan} - JK \text{ A} - JK \text{ B}$$

$$= 46606,0147 - 1065232,444 - 2876152,444$$

$$= 819237,889$$

Tests of Between-Subjects Effects

Dependent Variable: Kadar Air

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	7417135,278 ^a	9	824126,142	3,637	,041
Intercept	1212863334,7	1	1212863334,7	5352,037	<,001
CB_MSM	1065232,444	2	532616,222	2,350	,157
SCI	2876152,444	2	1438076,222	6,346	,022
Ulangan	2656512,500	1	2656512,500	11,722	,009
CB_MSM * SCI	819237,889	4	204809,472	,904	,505
Error	1812937,000	8	226617,125		

Kadar Air

Duncan^{a,b}

Sodium Cocoyl Isethionate	N	Subset	
		1	2
B1 (5%)	6	7644,500	
B2 (6%)	6		8458,833
B3 (7%)	6		8522,500
Sig.		1,000	,823

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 226617,125.

a. Uses Harmonic Mean Sample Size = 6,000.

b. Alpha = 0,05.

Lampiran 3 Dokumentasi Pembuatan Sampo





