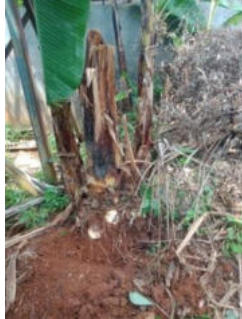


LAMPIRAN

1. Pembuatan Pati



Pengambilan bonggol pisang



Bonggol pisang



Pembersihan bonggol pisang



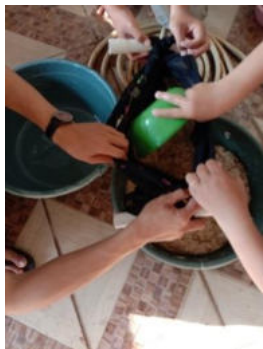
Proses perendaman dengan natrium bisulfit



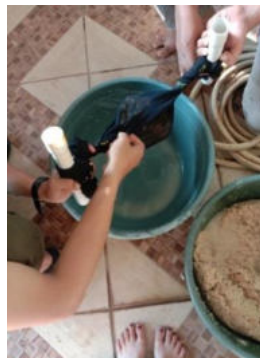
Penghalusan bonggol pisang



Bonggol pisang yang telah halus



Pemerasan bonggol pisang



yang telah halus dan diambil



hasil perasannya saja



Air yang ada endapan pati



Endapan pati bonggol pisang basah



Pati bonggol yang sudah kering

2. Pembuatan Kitosan



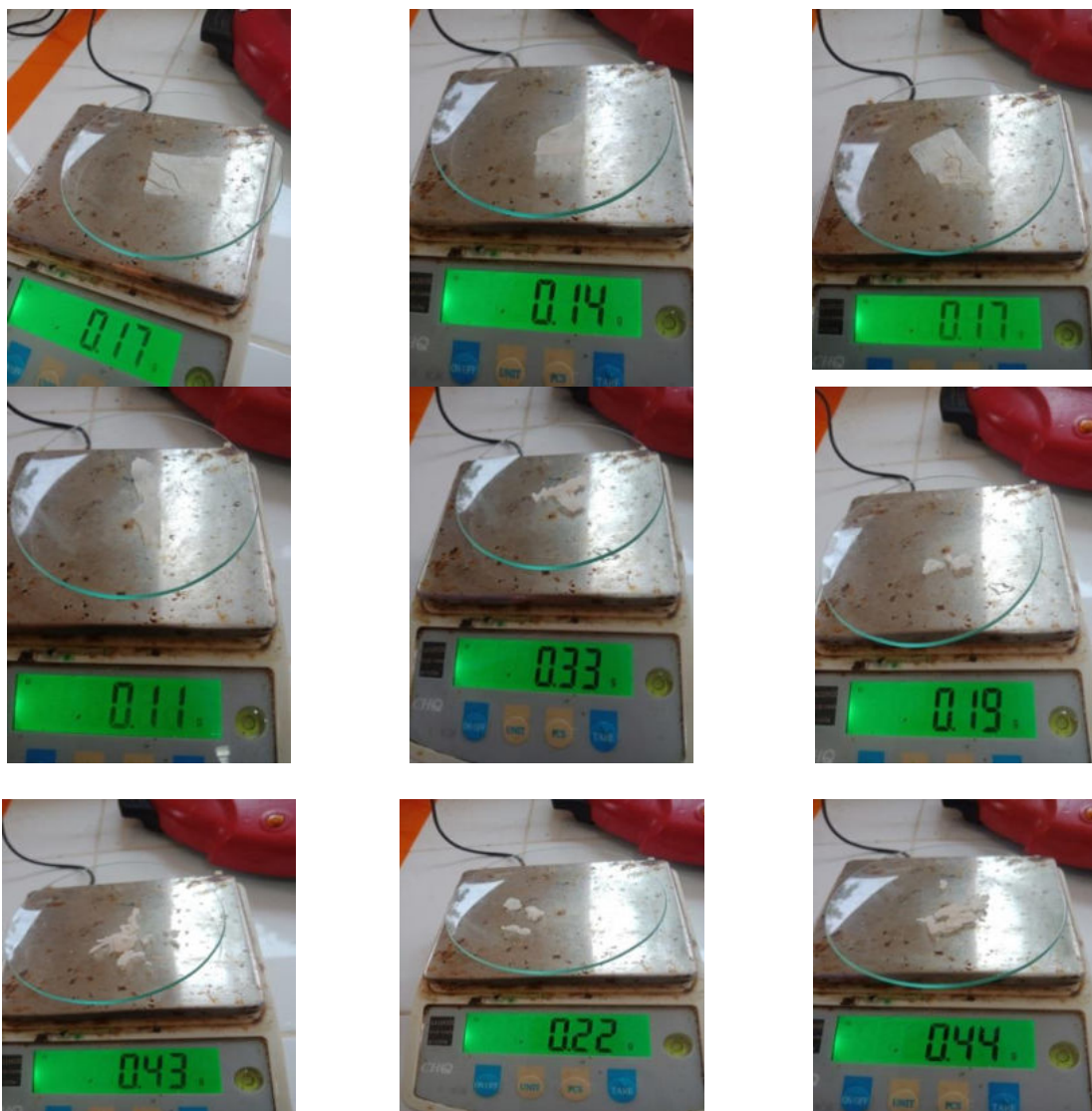
3. Pembuatan Bioplastik



4. Uji Ketahanan Air







5. Uji Biodegradabilitas



Hari ke 1



Hari ke 2



Hari ke 3



Hari ke 4



Hari ke 5



Hari ke 6



Hari ke 7

6. Bahan-bahan



7. SPSS Uji Biodegradabilitas

No	Sampel	Pengulangan 1	Pengulangan 2	Pengulangan 3	Rata- Rata
1	A1	4	4	4	4
2	A2	3	3	6	4
3	A3	4	4	4	4
4	A4	6	3	3	4
5	B1	6	5	4	5
6	B2	7	5	6	6
7	B3	4	6	5	5
8	B4	6	3	3	4
9	C1	7	7	7	7
10	C2	6	7	5	6
11	C3	5	5	5	5
12	C4	5	7	6	6
13	D1	7	7	7	7
14	D2	7	5	6	6
15	D3	6	5	4	5
16	D4	6	4	5	5

8. SPSS Uji ketahanan air

Sampel	Persen Ketahaan Air
kitosan 0 gr, gliserol 0 ml	0,1
kitosan 0 gr, gliserol 2,5 ml	0,11
kitosan 0 gr, gliserol 5 ml	0,09
kitosan 0 gr, gliserol 7,5 ml	0,12
kitosan 0,1 gr, gliserol 0 ml	0,04
kitosan 0,1 gr, gliserol 2,5 ml	0,06
kitosan 0,1 gr, gliserol 5 ml	0,08
kitosan 0,1 gr, ngliserol 7,5 ml	0,07
kitosan 0,2 gr, gliserol 0 ml	0,03
kitosan 0,2 gr, gliserol 2,5 ml	0,08
kitosan 0,2 gr, gliserol 5 ml	0,07
kitosan 0,2 gr, gliserol 7,5 ml	0,09
kitosan 0,3 gr, gliserol 0 ml	0,02
kitosan 0,3 gr, gliserol 2,5 ml	0,11
kitosan 0,3 gr, gliserol 5 ml	0,12
kitosan 0,3 gr, gliserol 7,5 ml	0,13

UNIANOVA ketahananAir BY kitosan

Descriptive Statistics

Dependent Variable: uji ketahanan air

variasi komposisi kitosan	Mean	Std. Deviation	N
Kontrol	,0350	,01446	12
0,1 gram	,0900	,01758	12
0,2 gram	,0925	,02179	12
0,3 gram	,0950	,02355	12
Total	,0781	,03160	48

UNIANOVA ketahananAir BY gliserol

Descriptive Statistics

Dependent Variable: uji ketahanan air

variasi komposisi gliserol	Mean	Std. Deviation	N
Kontrol	,0700	,03384	12
2,5 ml	,0775	,03545	12
5 ml	,0925	,03519	12
7,5 ml	,0725	,01712	12
Total	,0781	,03160	48

UNIANOVA ketahananAir BY kitosan gliserol

Univariate Analysis of Variance

Between-Subjects Factors

		Value Label	N
variasi komposisi kitosan	1	Kontrol	12
	2	0,1 gram	12
	3	0,2 gram	12

	4	0,3 gram	12
variasi komposisi gliserol	1	Kontrol	12
	2	2,5 ml	12
	3	5 ml	12
	4	7,5 ml	12

Descriptive Statistics

Dependent Variable: uji ketahanan air

variasi komposisi kitosan	variasi komposisi gliserol	Mean	Std. Deviation	N
Kontrol	Kontrol	,0200	,01000	3
	2,5 ml	,0300	,01000	3
	5 ml	,0400	,01000	3
	7,5 ml	,0500	,01000	3
	Total	,0350	,01446	12
0,1 gram	Kontrol	,0800	,01732	3
	2,5 ml	,0900	,01732	3
	5 ml	,1100	,01000	3
	7,5 ml	,0800	,01000	3
	Total	,0900	,01758	12
0,2 gram	Kontrol	,0900	,02000	3
	2,5 ml	,0800	,02000	3
	5 ml	,1200	,01000	3
	7,5 ml	,0800	,01000	3
	Total	,0925	,02179	12

0,3 gram	Kontrol	,0900	,02000	3
	2,5 ml	,1100	,03000	3
	5 ml	,1000	,02646	3
	7,5 ml	,0800	,01732	3
	Total	,0950	,02355	12
Total	Kontrol	,0700	,03384	12
	2,5 ml	,0775	,03545	12
	5 ml	,0925	,03519	12
	7,5 ml	,0725	,01712	12
	Total	,0781	,03160	48

Tests of Between-Subjects Effects

Dependent Variable: uji ketahanan air

Source	Type III Sum of Squares	df	Mean Square	F
Corrected Model	,038 ^a	15	,003	8,991
Intercept	,293	1	,293	1041,667
kitosan	,030	3	,010	35,444
gliserol	,004	3	,001	4,333
kitosan * gliserol	,004	9	,000	1,726
Error	,009	32	,000	
Total	,340	48		
Corrected Total	,047	47		

a. R Squared = ,808 (Adjusted R Squared = ,718)

Tests of Between-Subjects Effects

Dependent Variable: uji ketahanan air

Source	Sig.	Partial Eta Squared
Corrected Model	,000	,808
Intercept	,000	,970
kitosan	,000	,769
gliserol	,011	,289
kitosan * gliserol	,124	,327

Post Hoc Tests variasi komposisi kitosan

Multiple Comparisons

uji ketahanan air

Tukey HSD

(I) variasi komposisi kitosan	(J) variasi komposisi kitosan	Mean Difference (I-J)	Std. Error	Sig.
Kontrol	0,1 gram	-,0550*	,00685	,000
	0,2 gram	-,0575*	,00685	,000
	0,3 gram	-,0600*	,00685	,000
0,1 gram	Kontrol	,0550*	,00685	,000
	0,2 gram	-,0025	,00685	,983
	0,3 gram	-,0050	,00685	,884
0,2 gram	Kontrol	,0575*	,00685	,000
	0,1 gram	,0025	,00685	,983
	0,3 gram	-,0025	,00685	,983

0,3 gram	Kontrol	,0600*	,00685	,000
	0,1 gram	,0050	,00685	,884
	0,2 gram	,0025	,00685	,983

Based on observed means.

The error term is Mean Square(Error) = ,000.

*. The mean difference is significant at the ,05 level.

Multiple Comparisons

uji ketahanan air

Tukey HSD

(I) variasi komposisi kitosan	(J) variasi komposisi kitosan	95% Confidence Interval	
		Lower Bound	Upper Bound
Kontrol	0,1 gram	-,0735	-,0365
	0,2 gram	-,0760	-,0390
	0,3 gram	-,0785	-,0415
0,1 gram	Kontrol	,0365	,0735
	0,2 gram	-,0210	,0160
	0,3 gram	-,0235	,0135
0,2 gram	Kontrol	,0390	,0760
	0,1 gram	-,0160	,0210
	0,3 gram	-,0210	,0160
0,3 gram	Kontrol	,0415	,0785
	0,1 gram	-,0135	,0235
	0,2 gram	-,0160	,0210

Based on observed means.

The error term is Mean Square(Error) = ,000.

Homogeneous Subsets

uji ketahanan air

Tukey HSD^{a,b}

variasi komposisi kitosan	N	Subset	
		1	2
Kontrol	12	,0350	
0,1 gram	12		,0900
0,2 gram	12		,0925
0,3 gram	12		,0950
Sig.		1,000	,884

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = ,000.

a. Uses Harmonic Mean Sample Size = 12,000.

b. Alpha = ,05.

variasi komposisi gliserol

Multiple Comparisons

uji ketahanan air

Tukey HSD

(I) variasi komposisi gliserol	(J) variasi komposisi gliserol	Mean Difference (I-J)	Std. Error	Sig.
Kontrol	2,5 ml	-,0075	,00685	,695
	5 ml	-,0225*	,00685	,013
	7,5 ml	-,0025	,00685	,983
2,5 ml	Kontrol	,0075	,00685	,695
	5 ml	-,0150	,00685	,147
	7,5 ml	,0050	,00685	,884

5 ml	Kontrol	,0225*	,00685	,013
	2,5 ml	,0150	,00685	,147
	7,5 ml	,0200*	,00685	,031
7,5 ml	Kontrol	,0025	,00685	,983
	2,5 ml	-,0050	,00685	,884
	5 ml	-,0200*	,00685	,031

Based on observed means.

The error term is Mean Square(Error) = ,000.

*. The mean difference is significant at the ,05 level.

Multiple Comparisons

uji ketahanan air

Tukey HSD

(I) variasi komposisi gliserol	(J) variasi komposisi gliserol	95% Confidence Interval	
		Lower Bound	Upper Bound
Kontrol	2,5 ml	-,0260	,0110
	5 ml	-,0410	-,0040
	7,5 ml	-,0210	,0160
2,5 ml	Kontrol	-,0110	,0260
	5 ml	-,0335	,0035
	7,5 ml	-,0135	,0235
5 ml	Kontrol	,0040	,0410
	2,5 ml	-,0035	,0335
	7,5 ml	,0015	,0385
7,5 ml	Kontrol	-,0160	,0210
	2,5 ml	-,0235	,0135

5 ml	-,0385	-,0015
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Based on observed means.

The error term is Mean Square(Error) = ,000.

Homogeneous Subsets

uji ketahanan air

Tukey HSD^{a,b}

variasi komposisi gliserol	N	Subset	
		1	2
Kontrol	12	,0700	
7,5 ml	12	,0725	
2,5 ml	12	,0775	,0775
5 ml	12		,0925
Sig.		,695	,147

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = ,000.

a. Uses Harmonic Mean Sample Size = 12,000.

kitosan

Univariate Analysis of Variance

Descriptive Statistics

Dependent Variable: uji Biodegradabilitas

variasi komposisi kitosan	Mean	Std. Deviation	N
Kontrol	4,00	1,044	12
0,1 gram	6,50	,798	12
0,2 gram	4,50	1,000	12
0,3 gram	2,75	,452	12

Descriptive Statistics

Dependent Variable: uji Biodegradabilitas

variasi komposisi kitosan	Mean	Std. Deviation	N
Kontrol	4,00	1,044	12
0,1 gram	6,50	,798	12
0,2 gram	4,50	1,000	12
0,3 gram	2,75	,452	12
Total	4,44	1,597	48

UNIANOVA terurai BY gliserol

Univariate Analysis of Variance

Descriptive Statistics

Dependent Variable: uji Biodegradabilitas

variasi komposisi gliserol	Mean	Std. Deviation	N
Kontrol	4,50	1,931	12
2,5 ml	4,50	1,883	12
5 ml	4,50	1,243	12
7,5 ml	4,25	1,422	12
Total	4,44	1,597	48

UNIANOVA terurai BY kitosan gliserol

Univariate Analysis of Variance

Between-Subjects Factors

		Value Label	N
variasi komposisi kitosan	1	Kontrol	12
	2	0,1 gram	12
	3	0,2 gram	12

	4	0,3 gram	12
variasi komposisi gliserol	1	Kontrol	12
	2	2,5 ml	12
	3	5 ml	12
	4	7,5 ml	12

Descriptive Statistics

Dependent Variable: uji Biodegradabilitas

variasi komposisi kitosan	variasi komposisi gliserol	Mean	Std. Deviation	N
Kontrol	Kontrol	4,00	,000	3
	2,5 ml	4,00	1,732	3
	5 ml	4,00	,000	3
	7,5 ml	4,00	1,732	3
	Total	4,00	1,044	12
0,1 gram	Kontrol	7,00	,000	3
	2,5 ml	7,00	,000	3
	5 ml	6,00	1,000	3
	7,5 ml	6,00	1,000	3
	Total	6,50	,798	12
0,2 gram	Kontrol	5,00	1,000	3
	2,5 ml	4,00	1,732	3
	5 ml	5,00	,000	3
	7,5 ml	4,00	,000	3

Total		4,50	1,000	12
0,3 gram	Kontrol	2,00	,000	3
	2,5 ml	3,00	,000	3
	5 ml	3,00	,000	3
	7,5 ml	3,00	,000	3
	Total	2,75	,452	12
Total	Kontrol	4,50	1,931	12
	2,5 ml	4,50	1,883	12
	5 ml	4,50	1,243	12
	7,5 ml	4,25	1,422	12
	Total	4,44	1,597	48

Tests of Between-Subjects Effects

Dependent Variable: uji Biodegradabilitas

Source	Type III Sum of Squares	df	Mean Square	F
Corrected Model	95,813 ^a	15	6,388	8,517
Intercept	945,187	1	945,187	1260,250
kitosan	87,563	3	29,188	38,917
gliserol	,562	3	,187	,250
kitosan * gliserol	7,687	9	,854	1,139
Error	24,000	32	,750	
Total	1065,000	48		
Corrected Total	119,813	47		

Tests of Between-Subjects Effects

Dependent Variable: uji Biodegradabilitas

Source	Type III Sum of Squares	df	Mean Square	F
Corrected Model	95,813 ^a	15	6,388	8,517
Intercept	945,187	1	945,187	1260,250
kitosan	87,563	3	29,188	38,917
gliserol	,562	3	,187	,250
kitosan * gliserol	7,687	9	,854	1,139
Error	24,000	32	,750	
Total	1065,000	48		
Corrected Total	119,813	47		

a. R Squared = ,800 (Adjusted R Squared = ,706)

Tests of Between-Subjects Effects

Dependent Variable: uji Biodegradabilitas

Source	Sig.	Partial Eta Squared
Corrected Model	,000	,800
Intercept	,000	,975
kitosan	,000	,785
gliserol	,861	,023
kitosan * gliserol	,366	,243

Post Hoc Tests variasi komposisi kitosan

Multiple Comparisons

uji Biodegradabilitas

Tukey HSD

(I) variasi komposisi kitosan	(J) variasi komposisi kitosan	Mean Difference (I-J)	Std. Error	Sig.
Kontrol	0,1 gram	-2,50*	,354	,000
	— 0,2 gram	-,50	,354	,500
	0,3 gram	1,25*	,354	,007
0,1 gram	Kontrol	2,50*	,354	,000
	— 0,2 gram	2,00*	,354	,000
	0,3 gram	3,75*	,354	,000
— 0,2 gram	Kontrol	,50	,354	,500
	— 0,1 gram	-2,00*	,354	,000
	0,3 gram	1,75*	,354	,000
0,3 gram	Kontrol	-1,25*	,354	,007
	— 0,1 gram	-3,75*	,354	,000
	0,2 gram	-1,75*	,354	,000

Based on observed means.

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

*. The mean difference is significant at the ,05 level.

Multiple Comparisons

uji Biodegradabilitas

Tukey HSD

(I) variasi komposisi kitosan	(J) variasi komposisi kitosan	95% Confidence Interval	
		Lower Bound	Upper Bound
Kontrol	0,1 gram	-3,46	-1,54
	0,2 gram	-1,46	,46
	0,3 gram	,29	2,21
0,1 gram	Kontrol	1,54	3,46
	0,2 gram	1,04	2,96
	0,3 gram	2,79	4,71
0,2 gram	Kontrol	-,46	1,46
	0,1 gram	-2,96	-1,04
	0,3 gram	,79	2,71
0,3 gram	Kontrol	-2,21	-,29
	0,1 gram	-4,71	-2,79
	0,2 gram	-2,71	-,79

Based on observed means.

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

Homogeneous Subsets

uji Biodegradabilitas

Tukey HSD^{a,b}

variasi komposisi kitosan	N	Subset		
		1	2	3
0,3 gram	12	2,75		

Kontrol	12		4,00	
0,2 gram	12		4,50	
0,1 gram	12			6,50
Sig.		1,000	,500	1,000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

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

a. Uses Harmonic Mean Sample Size = 12,000.

b. Alpha = ,05.

variasi komposisi gliserol

Multiple Comparisons

uji Biodegradabilitas

Tukey HSD

(I) variasi komposisi gliserol	(J) variasi komposisi gliserol	Mean Difference (I-J)	Std. Error	Sig.
Kontrol	2,5 ml	,00	,354	1,000
	5 ml	,00	,354	1,000
	7,5 ml	,25	,354	,894
2,5 ml	Kontrol	,00	,354	1,000
	5 ml	,00	,354	1,000
	7,5 ml	,25	,354	,894
5 ml	Kontrol	,00	,354	1,000
	2,5 ml	,00	,354	1,000
	7,5 ml	,25	,354	,894
7,5 ml	Kontrol	-,25	,354	,894
	2,5 ml	-,25	,354	,894

5 ml	-,25	,354	,894
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Based on observed means.

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

Multiple Comparisons

uji Biodegradabilitas

Tukey HSD

(I) variasi komposisi gliserol	(J) variasi komposisi gliserol	95% Confidence Interval	
		Lower Bound	Upper Bound
Kontrol	2,5 ml	-,96	,96
	5 ml	-,96	,96
	7,5 ml	-,71	1,21
2,5 ml	Kontrol	-,96	,96
	5 ml	-,96	,96
	7,5 ml	-,71	1,21
5 ml	Kontrol	-,96	,96
	2,5 ml	-,96	,96
	7,5 ml	-,71	1,21
7,5 ml	Kontrol	-1,21	,71
	2,5 ml	-1,21	,71
	5 ml	-1,21	,71

Based on observed means.

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

Homogeneous Subsets

uji Biodegradabilitas

Tukey HSD^{a,b}

variasi komposisi gliserol	N	Subset
		1
7,5 ml	12	4,25
2,5 ml	12	4,50
5 ml	12	4,50
Kontrol	12	4,50
Sig.		,894

Means for groups in homogeneous subsets are displayed.

Based on observed means.

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

a. Uses Harmonic Mean Sample Size = 12,000.

b. Alpha = ,05.