

LAMPIRAN HASIL PENELITIAN

Sampel Tongkol jagung Kering : 500 gram

Asam yang digunakan : HCl

Konsentrasi Asam : 0,1 N

Lampiran 1. Data Berat Rendemen Abu yang Diperoleh

Waktu = 5 jam
 Suhu = 550°C
 Berat Tongkol Jagung Kering = 112,5 gram
 Berat abu = 27,5 gram
 Rendemen abu (%) = 5,5 %

Lampiran 2. Data Analisis Normalitas Ekstrak Abu

Tabel A. 1 Data Analisis Konsentrasi pada Maserasi dengan Sistem *Semibatch*

Rasio (gram/mL)	Waktu Sampling (jam)	Sampling (mL)	Volume HCl (0,1N) (mL)	Normalitas (N)
1/25	12	25	30	0,112
	24		30	0,112
	36		30	0,112
	48		30	0,112
	60		30	0,112
2/25	12	25	30	0,112
	24		60	0,223
	36		60	0,223
	48		60	0,223
	60		60	0,223
3/25	12	25	50	0,186
	24		80	0,297
	36		90	0,334
	48		90	0,334
	60		90	0,334
4/25	12	25	60	0,223
	24		80	0,297
	36		110	0,409
	48		150	0,558
	60		150	0,558

Tabel A. 2 Data Analisis Konsentrasi pada Maserasi dengan Sistem *Batch*

Rasio Abu/Pelarut	Konsentrasi (N)			
	Penyaringan	Penyaringan	Penyaringan	Penyaringan
	I	II	III	IV
1gram/25mL	0,1488	0,3720	0,5580	0,9672
2gram/25mL	0,4836	0,9672	1,7856	3,2365
3gram/25mL	0,4464	0,1004	1,7700	2,0646
4gram/25mL	0,4464	1,0044	1,9158	3,6828

Lampiran 3. Data Analisis pH Ekstrak Abu

Tabel A. 3 Data Analisis pH Ekstrak Abu pada Maserasi dengan Sistem *Semibatch*

Rasio (gram/mL)	Waktu Sampling (jam)	Sampling (mL)	pH
1/25	12	25	12,39
	24		12,52
	36		12,52
	48		12,52
	60		12,52
2/25	12	25	12,69
	24		12,87
	36		12,92
	48		12,92
	60		12,92
3/25	12	25	12,84
	24		13,06
	36		13,12
	48		13,15
	60		13,15
4/25	12	25	12,86
	24		13,05
	36		13,24
	48		13,30
	60		13,30

Tabel A. 4 Data Analisis pH Ekstrak Abu pada Maserasi dengan Sistem *Batch*

Rasio Abu/Pelarut	Konsentrasi (N)			
	Penyaringan	Penyaringan	Penyaringan	Penyaringan
	I	II	III	IV
1gram/25mL	12,16	12,57	13,16	13,98
2gram/25mL	12,48	12,98	13,48	14,00
3gram/25mL	12,68	13,40	13,85	14,00
4gram/25mL	13,27	14,00	14,00	14,00

Lampiran 4. Data Hasil Perhitungan Rendemen Alkali Dalam Ekstrak Abu Tongkol Jagung

Tabel A. 5 Data Hasil Perhitungan Rendemen Alkali dalam Ekstrak Abu

Rasio Abu/Pelarut	Waktu Sampling (hari)	Alkali pada Abu (gram)	Alkali Terekstrak (gram)	Rendemen (%)
1gram/25mL	3,5	0,77	0,154	20,15
2gram/25mL		1,54	0,308	20,15
3gram/25mL		2,31	0,462	20,15
4gram/25mL		3,08	0,308	10,00

Lampiran 5. Perhitungan Kadar Air Tongkol Jagung

Kadar air tongkol jagung:

Berat awal tongkol jagung : 500 gram

Berat akhir tongkol jagung : 112,5 gram

$$\begin{aligned}
 \text{Kadar air tongkol jagung} &= \frac{\text{Berat awal} - \text{Berat akhir}}{\text{berat awal}} \times 100 \% \\
 &= \frac{500 \text{ g} - 112,5 \text{ g}}{500 \text{ g}} \times 100 \% \\
 &= \frac{387,5 \text{ g}}{500 \text{ g}} \times 100 \% \\
 &= 77,5 \%
 \end{aligned}$$

Lampiran 6. Perhitungan Rendemen Abu Tongkol Jagung

Rendemen abu dengan kondisi pembakaran 550°C selama 5 jam:

Berat tongkol jagung basah (Wb) = 500 gram

Berat tongkol jagung kering (Wk) = 112,5 gram

Berat abu hasil pembakaran (Wa) = 27,5 gram

Basis Basah,

$$\text{Rendemen abu (\%)} = \frac{W_a}{W_b} \times 100 \%$$

$$= \frac{27,5 \text{ g}}{500 \text{ g}} \times 100 \%$$

$$= 5,5 \%$$

Basis Kering,

$$\text{Rendemen Abu (\%)} = \frac{W_a}{W_k} \times 100 \%$$

$$= \frac{27,5 \text{ g}}{112,5 \text{ g}} \times 100 \%$$

$$= 24,44 \%$$

Lampiran 7. Perhitungan Konsentrasi Ekstrak Abu

a. Standarisasi NaOH

Dik: N A. Oksalat = 0,1 N
 V A. Oksalat = 10 mL
 V NaOH I = 9,4 mL
 II = 9,6 mL

Dit: N NaOH =?

Jawab:

$$N \text{ NaOH} = \frac{N \text{ Asam Oksalat} \times V \text{ Asam Oksalat}}{V \text{ NaOH}}$$

$$N \text{ NaOH} = \frac{0,1 \text{ N} \times 10 \text{ mL}}{9,5 \text{ mL}}$$

$$N \text{ NaOH} = \frac{1 \text{ NmL}}{9,5 \text{ mL}}$$

$$N \text{ NaOH} = 0,105 \text{ N}$$

b. Standarisasi HCl

Dik: N NaOH = 0,1 N
 V HCl = 10 mL
 V NaOH I = 8,8 mL
 II = 9 mL

Dit: N HCl =?

$$N \text{ HCl} = \frac{N \text{ NaOH} \times V \text{ NaOH}}{V \text{ HCl}}$$

$$N \text{ HCl} = \frac{0,105 \text{ N} \times 8,9 \text{ mL}}{10 \text{ mL}}$$

$$N \text{ HCl} = \frac{0,934 \text{ NmL}}{10 \text{ mL}}$$

$$N \text{ HCl} = 0,093 \text{ N}$$

Perhitungan Titration sampel

- Sampel A1**

Dik: $N \text{ HCl} = 0,093 \text{ N}$
 $V \text{ HCl I} = 0,3 \text{ mL}$
 $\text{II} = 0,3 \text{ mL}$
 $V. \text{ Sampel A1} = 25 \text{ mL}$
 $\text{FP} = 100$

Dit: $N \text{ sampel A1} = \dots?$

$$N \text{ Sampel A1} = \frac{N \text{ HCl} \times V. \text{HCl}}{V. \text{Sampel A1}} \times \text{FP}$$

$$N \text{ Sampel A1} = \frac{0,093 \text{ N} \times 0,3 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel A1} = \frac{0,028 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel A1} = 0,112 \text{ N}$$

- Sampel A2**

Dik: $N \text{ HCl} = 0,093 \text{ N}$
 $V \text{ HCl I} = 0,3 \text{ mL}$
 $\text{II} = 0,3 \text{ mL}$
 $V. \text{ Sampel A2} = 25 \text{ mL}$
 $\text{FP} = 100$

Dit: $N \text{ sampel A2} = \dots?$

$$N \text{ Sampel A2} = \frac{N \text{ HCl} \times V. \text{HCl}}{V. \text{Sampel A2}} \times \text{FP}$$

$$N \text{ Sampel A2} = \frac{0,093 \text{ N} \times 0,3 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel A2} = \frac{0,028 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel A2} = 0,112 \text{ N (konstan)}$$

- Sampel B1**

Dik: $N \text{ HCl} = 0,093 \text{ N}$
 $V \text{ HCl I} = 0,3 \text{ mL}$
 $\text{II} = 0,3 \text{ mL}$
 $V. \text{ Sampel B1} = 25 \text{ mL}$
 $\text{FP} = 100$

Dit: $N \text{ sampel B1} = \dots?$

$$N \text{ Sampel B1} = \frac{N \text{ HCl} \times V. \text{HCl}}{V. \text{Sampel B1}} \times \text{FP}$$

$$N \text{ Sampel B1} = \frac{0,093 \text{ N} \times 0,3 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel B1} = \frac{0,028 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel B1} = 0,112 \text{ N}$$

- **Sampel B2**

Dik: $N \text{ HCl} = 0,093 \text{ N}$

$V \text{ HCl I} = 0,6 \text{ mL}$

$\text{II} = 0,6 \text{ mL}$

$V. \text{ Sampel B2} = 25 \text{ mL}$

$\text{FP} = 100$

Dit: $N \text{ sampel B2} = \dots?$

$$N \text{ Sampel B2} = \frac{N \text{ HCl} \times V. \text{HCl}}{V. \text{Sampel B2}} \times \text{FP}$$

$$N \text{ Sampel A2} = \frac{0,093 \text{ N} \times 0,6 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel A2} = \frac{0,0558 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel A2} = 0,2232 \text{ N}$$

- **Sampel B3**

Dik: $N \text{ HCl} = 0,093 \text{ N}$

$V \text{ HCl I} = 0,6 \text{ mL}$

$\text{II} = 0,6 \text{ mL}$

$V. \text{ Sampel B3} = 25 \text{ mL}$

$\text{FP} = 100$

Dit: $N \text{ sampel B3} = \dots?$

$$N \text{ Sampel B3} = \frac{N \text{ HCl} \times V. \text{HCl}}{V. \text{Sampel B3}} \times \text{FP}$$

$$N \text{ Sampel B3} = \frac{0,093 \text{ N} \times 0,6 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel B3} = \frac{0,0558 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel B3} = 0,2232 \text{ N (konstan)}$$

- **Sampel C1**

Dik: $N \text{ HCl} = 0,093 \text{ N}$

$V \text{ HCl I} = 0,5 \text{ mL}$

$\text{II} = 0,5 \text{ mL}$

$V. \text{ Sampel C1} = 25 \text{ mL}$

$\text{FP} = 100$

Dit: $N \text{ sampel C1} = \dots?$

$$N \text{ Sampel C1} = \frac{N \text{ HCl} \times V.\text{HCl}}{V.\text{Sampel C1}} \times \text{FP}$$

$$N \text{ Sampel C1} = \frac{0,093 \text{ N} \times 0,5 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel C1} = \frac{0,0465 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel C1} = 0,186 \text{ N}$$

- **Sampel C2**

Dik: N HCl = 0,093 N

V HCl I = 0,8 mL

II = 0,8 mL

V. Sampel C2 = 25 mL

FP = 100

Dit: N sampel C2 =?

$$N \text{ Sampel C2} = \frac{N \text{ HCl} \times V.\text{HCl}}{V.\text{Sampel C2}} \times \text{FP}$$

$$N \text{ Sampel C2} = \frac{0,093 \text{ N} \times 0,8 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel C2} = \frac{0,0744 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel C2} = 0,2976 \text{ N}$$

- **Sampel C3**

Dik: N HCl = 0,093 N

V HCl I = 0,9 mL

II = 0,9 mL

V. Sampel C3 = 25 mL

FP = 100

Dit: N sampel C3 =?

$$N \text{ Sampel C3} = \frac{N \text{ HCl} \times V.\text{HCl}}{V.\text{Sampel C3}} \times \text{FP}$$

$$N \text{ Sampel C3} = \frac{0,093 \text{ N} \times 0,9 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel C3} = \frac{0,0837 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel C3} = 0,3348 \text{ N}$$

- **Sampel C4**

Dik: N HCl = 0,093 N

V HCl I = 0,9 mL

II = 0,9 mL

V. Sampel C4 = 25 mL

FP = 100

Dit: N sampel C4 =?

$$N \text{ Sampel C4} = \frac{N \text{ HCl} \times V.\text{HCl}}{V.\text{Sampel C4}} \times \text{FP}$$

$$N \text{ Sampel C4} = \frac{0,093 \text{ N} \times 0,9 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel C4} = \frac{0,0837 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel C4} = 0,3348 \text{ N (Konstan)}$$

- **Sampel D1**

Dik: N HCl = 0,093 N

V HCl I = 0,6 mL

II = 0,6 mL

V. Sampel D1 = 25 mL

FP = 100

Dit: N sampel D1 =?

$$N \text{ Sampel D1} = \frac{N \text{ HCl} \times V.\text{HCl}}{V.\text{Sampel D1}} \times \text{FP}$$

$$N \text{ Sampel D1} = \frac{0,093 \text{ N} \times 0,6 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel D1} = \frac{0,0558 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel D1} = 0,2232 \text{ N}$$

- **Sampel D2**

Dik: N HCl = 0,093 N

V HCl I = 0,8 mL

II = 0,8 mL

V. Sampel D2 = 25 mL

FP = 100

Dit: N sampel D2 =?

$$N \text{ Sampel D2} = \frac{N \text{ HCl} \times V.\text{HCl}}{V.\text{Sampel D2}} \times \text{FP}$$

$$N \text{ Sampel D2} = \frac{0,093 \text{ N} \times 0,8 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel D2} = \frac{0,0744 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel D2} = 0,2976 \text{ N}$$

- **Sampel D3**

Dik: N HCl = 0,093 N

V HCl I = 1,1 mL

II = 1,1 mL

V. Sampel D3 = 25 mL

FP = 100

Dit: N sampel D3 =?

$$N \text{ Sampel D3} = \frac{N \text{ HCl} \times V \text{ HCl}}{V \text{ Sampel D2}} \times \text{FP}$$

$$N \text{ Sampel D3} = \frac{0,093 \text{ N} \times 1,1 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel D3} = \frac{0,1023 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel D3} = 0,4092 \text{ N}$$

• **Sampel D4**

Dik: N HCl = 0,093 N

V HCl I = 1,5 mL

II = 1,5 mL

V. Sampel D4 = 25 mL

FP = 100

Dit: N sampel D4 =?

$$N \text{ Sampel D4} = \frac{N \text{ HCl} \times V \text{ HCl}}{V \text{ Sampel D4}} \times \text{FP}$$

$$N \text{ Sampel D4} = \frac{0,093 \text{ N} \times 1,5 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel D4} = \frac{0,1395 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel D4} = 0,558 \text{ N}$$

• **Sampel D5**

Dik: N HCl = 0,093 N

V HCl I = 1,5 mL

II = 1,5 mL

V. Sampel D5 = 25 mL

FP = 100

Dit: N sampel D4 =?

$$N \text{ Sampel D5} = \frac{N \text{ HCl} \times V \text{ HCl}}{V \text{ Sampel D4}} \times \text{FP}$$

$$N \text{ Sampel D5} = \frac{0,093 \text{ N} \times 1,5 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel D5} = \frac{0,1395 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel D5} = 0,558 \text{ N (konstan)}$$

Hasil Pengamatan

Waktu Rasio	12 jam	24 jam	36 jam	48 jam	60 jam	72 jam
A	0,112 N	0,112 N				
B	0,112 N	0,223 N	0,223 N			
C	0,186 N	0,2976 N	0,3348 N	0,3348 N		
D	0,223 N	0,2976 N	0,4092N	0,558 N	0,558 N	

Hasil Batch

- Sampel E1**

Dik: N HCl = 0,093 N
 V HCl I = 0,4 mL
 II = 0,4 mL

V. Sampel E1 = 25 mL

FP = 100

Dit: N sampel E1 =?

$$N \text{ Sampel E1} = \frac{N \text{ HCl} \times V \text{ HCl}}{V \text{ Sampel E1}} \times \text{FP}$$

$$N \text{ Sampel E1} = \frac{0,093 \text{ N} \times 0,4 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel E1} = \frac{0,0372 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel E1} = 0,1488 \text{ N}$$

- Sampel E2**

Dik: N HCl = 0,093 N
 V HCl I = 1 mL
 II = 1 mL

V. Sampel E2 = 25 mL

FP = 100

Dit: N sampel E2 =?

$$N \text{ Sampel E2} = \frac{N \text{ HCl} \times V \text{ HCl}}{V \text{ Sampel E2}} \times \text{FP}$$

$$N \text{ Sampel E2} = \frac{0,093 \text{ N} \times 1 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel E2} = \frac{0,093 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel E2} = 0,372 \text{ N}$$

- Sampel E3**

Dik: N HCl = 0,093 N
 V HCl I = 1,5 mL

$$II = 1,5 \text{ mL}$$

$$V. \text{ Sampel E3} = 25 \text{ mL}$$

$$FP = 100$$

Dit: N sampel E3 =?

$$N \text{ Sampel E3} = \frac{N \text{ HCl} \times V. \text{HCl}}{V. \text{Sampel E3}} \times FP$$

$$N \text{ Sampel E3} = \frac{0,093 \text{ N} \times 1,5 \text{ mL}}{25 \text{ mL}} \times FP$$

$$N \text{ Sampel E3} = \frac{0,1395 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel E3} = 0,558 \text{ N}$$

- **Sampel E4**

Dik: N HCl = 0,093 N

V HCl I = 2,6 mL

II = 2,6 mL

V. Sampel E4 = 25 mL

FP = 100

Dit: N sampel E4 =?

$$N \text{ Sampel E4} = \frac{N \text{ HCl} \times V. \text{HCl}}{V. \text{Sampel E4}} \times FP$$

$$N \text{ Sampel E4} = \frac{0,093 \text{ N} \times 2,6 \text{ mL}}{25 \text{ mL}} \times FP$$

$$N \text{ Sampel E4} = \frac{0,2418 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel E4} = 0,9672 \text{ N}$$

- **Sampel F1**

Dik: N HCl = 0,093 N

V HCl I = 1,3 mL

II = 1,3 mL

V. Sampel F1 = 25 mL

FP = 100

Dit: N sampel F1 =?

$$N \text{ Sampel F1} = \frac{N \text{ HCl} \times V. \text{HCl}}{V. \text{Sampel F1}} \times FP$$

$$N \text{ Sampel F1} = \frac{0,093 \text{ N} \times 1,3 \text{ mL}}{25 \text{ mL}} \times FP$$

$$N \text{ Sampel F1} = \frac{0,1209 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel F1} = 0,4836 \text{ N}$$

- **Sampel F2**

Dik: N HCl = 0,093 N

$$\begin{aligned} V \text{ HCl} & \quad I = 2,6 \text{ mL} \\ & \quad II = 2,6 \text{ mL} \end{aligned}$$

$$V. \text{ Sampel F2} = 25 \text{ mL}$$

$$FP = 100$$

$$\text{Dit: } N \text{ sampel F2} = \dots?$$

$$N \text{ Sampel F2} = \frac{N \text{ HCl} \times V. \text{HCl}}{V. \text{Sampel F2}} \times FP$$

$$N \text{ Sampel F2} = \frac{0,093 \text{ N} \times 2,6 \text{ mL}}{25 \text{ mL}} \times FP$$

$$N \text{ Sampel F2} = \frac{0,2418 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel F2} = 0,9672 \text{ N}$$

- **Sampel F3**

$$\text{Dik: } N \text{ HCl} = 0,093 \text{ N}$$

$$V \text{ HCl} \quad I = 4,8 \text{ mL}$$

$$II = 4,8 \text{ mL}$$

$$V. \text{ Sampel F3} = 25 \text{ mL}$$

$$FP = 100$$

$$\text{Dit: } N \text{ sampel F3} = \dots?$$

$$N \text{ Sampel F3} = \frac{N \text{ HCl} \times V. \text{HCl}}{V. \text{Sampel F3}} \times FP$$

$$N \text{ Sampel F3} = \frac{0,093 \text{ N} \times 4,8 \text{ mL}}{25 \text{ mL}} \times FP$$

$$N \text{ Sampel F3} = \frac{0,4464 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel F3} = 1,7856 \text{ N}$$

- **Sampel F4**

$$\text{Dik: } N \text{ HCl} = 0,093 \text{ N}$$

$$V \text{ HCl} \quad I = 8,7 \text{ mL}$$

$$II = 8,7 \text{ mL}$$

$$V. \text{ Sampel F4} = 25 \text{ mL}$$

$$FP = 100$$

$$\text{Dit: } N \text{ sampel F4} = \dots?$$

$$N \text{ Sampel F4} = \frac{N \text{ HCl} \times V. \text{HCl}}{V. \text{Sampel F4}} \times FP$$

$$N \text{ Sampel F4} = \frac{0,093 \text{ N} \times 8,7 \text{ mL}}{25 \text{ mL}} \times FP$$

$$N \text{ Sampel F4} = \frac{0,8091 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel F4} = 3,2364 \text{ N}$$

- **Sampel G1**

Dik: N HCl = 0,093 N
 V HCl I = 1,2 mL
 II = 1,2 mL

V. Sampel G1 = 25 mL

FP = 100

Dit: N sampel G1 =?

$$N \text{ Sampel G1} = \frac{N \text{ HCl} \times V \text{ HCl}}{V \text{ Sampel G1}} \times FP$$

$$N \text{ Sampel G1} = \frac{0,093 \text{ N} \times 1,2 \text{ mL}}{25 \text{ mL}} \times FP$$

$$N \text{ Sampel G1} = \frac{0,1116 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel G1} = 0,4464 \text{ N}$$

- **Sampel G2**

Dik: N HCl = 0,093 N

V HCl I = 2,7 mL

II = 2,7 mL

V. Sampel G2 = 25 mL

FP = 100

Dit: N sampel G2 =?

$$N \text{ Sampel G2} = \frac{N \text{ HCl} \times V \text{ HCl}}{V \text{ Sampel G2}} \times FP$$

$$N \text{ Sampel G2} = \frac{0,093 \text{ N} \times 2,7 \text{ mL}}{25 \text{ mL}} \times FP$$

$$N \text{ Sampel G2} = \frac{0,2511 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel G2} = 1,004 \text{ N}$$

- **Sampel G3**

Dik: N HCl = 0,093 N

V HCl I = 4,76 mL

II = 4,76 mL

V. Sampel G3 = 25 mL

FP = 100

Dit: N sampel G3 =?

$$N \text{ Sampel G3} = \frac{N \text{ HCl} \times V \text{ HCl}}{V \text{ Sampel G1}} \times FP$$

$$N \text{ Sampel G3} = \frac{0,093 \text{ N} \times 4,76 \text{ mL}}{25 \text{ mL}} \times FP$$

$$N \text{ Sampel G3} = \frac{0,44268 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel G3} = 1,77 \text{ N}$$

- **Sampel G3**

Dik: N HCl = 0,093 N
 V HCl I = 5,4 mL
 II = 5,7 mL

V. Sampel G4 = 25 mL

FP = 100

Dit: N sampel G4 =?

$$N \text{ Sampel G4} = \frac{N \text{ HCl} \times V \text{ HCl}}{V \text{ Sampel G4}} \times \text{FP}$$

$$N \text{ Sampel G4} = \frac{0,093 \text{ N} \times 5,55 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel G4} = \frac{0,51615 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel G4} = 2,0646 \text{ N}$$

- **Sampel H1**

Dik: N HCl = 0,093 N

V HCl I = 1,2 mL

II = 1,2 mL

V. Sampel H1 = 25 mL

FP = 100

Dit: N sampel H1 =?

$$N \text{ Sampel H1} = \frac{N \text{ HCl} \times V \text{ HCl}}{V \text{ Sampel H1}} \times \text{FP}$$

$$N \text{ Sampel H1} = \frac{0,093 \text{ N} \times 1,2 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel H1} = \frac{0,1116 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel H1} = 0,4464 \text{ N}$$

- **Sampel H2**

Dik: N HCl = 0,093 N

V HCl I = 2,6 mL

II = 2,8 mL

V. Sampel H2 = 25 mL

FP = 100

Dit: N sampel H2 =?

$$N \text{ Sampel H2} = \frac{N \text{ HCl} \times V \text{ HCl}}{V \text{ Sampel H2}} \times \text{FP}$$

$$N \text{ Sampel H2} = \frac{0,093 \text{ N} \times 2,7 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel H2} = \frac{0,2511 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel H2} = 1,0044 \text{ N}$$

- **Sampel H2**

Dik: N HCl = 0,093 N
 V HCl I = 4,9 mL
 II = 5,4 mL
 V. Sampel H3 = 25 mL
 FP = 100

Dit: N sampel H3 =?

$$N \text{ Sampel H3} = \frac{N \text{ HCl} \times V \text{ HCl}}{V \text{ Sampel H3}} \times \text{FP}$$

$$N \text{ Sampel H3} = \frac{0,093 \text{ N} \times 5,15 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel H3} = \frac{0,47895 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel H3} = 1,9158 \text{ N}$$

- **Sampel H4**

Dik: N HCl = 0,093 N
 V HCl I = 10,3 mL
 II = 9,5 mL
 V. Sampel H4 = 25 mL
 FP = 100

Dit: N sampel H4 =?

$$N \text{ Sampel H2} = \frac{N \text{ HCl} \times V \text{ HCl}}{V \text{ Sampel H4}} \times \text{FP}$$

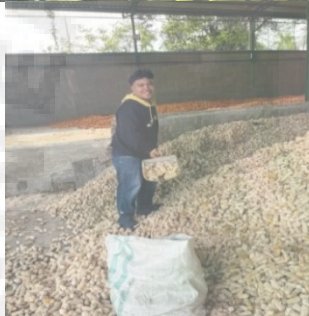
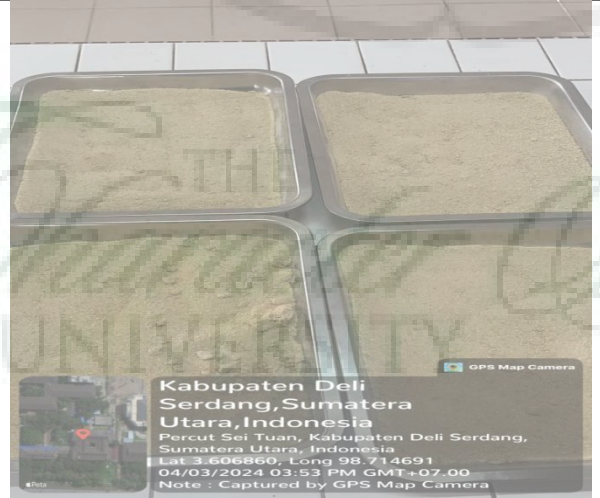
$$N \text{ Sampel H2} = \frac{0,093 \text{ N} \times 9,9 \text{ mL}}{25 \text{ mL}} \times \text{FP}$$

$$N \text{ Sampel H2} = \frac{0,9207 \text{ NmL}}{25 \text{ mL}} \times 100$$

$$N \text{ Sampel H2} = 3,6828 \text{ N}$$

Rasio	Waktu			
	3 hari	6 hari	9 hari	12 hari
E	0,1488 N	0,372 N	0,558 N	0,9672 N
F	0,4836 N	0,9672 N	1,7856 N	3,2364 N
G	0,4464 N	1,004 N	1,77 N	2,0646 N
H	0,4464 N	1,0044 N	1,9158 N	3,6828 N

Lampiran 8. Dokumentasi Penelitian

No	Dokumentasi	Keterangan
1		Tanaman jagung yang digunakan sebagai sumber alkali
	 	Pengambilan bahan baku (tongkol jagung)
		Pengeringan tongkol jagung dengan bantuan sinar matahari
3	 	Tongkol jagung yang telah kering dan dihaluskan

4



Furnace untuk pengabuan tongkol jagung

5



Tongkol jagung yang telah di abukan

Proses Maserasi Abu Tongkol Jagung



Sampling ekstrak abu tongkol jagung





Hasil titrasi ekstrak abu tongkol jagung



Analisa pH ekstrak abu tongkol jagung

Lampiran 9. Hasil XRF Komponen Abu Tongkol Jagung

		Laboratorium Kimia Instrumen Fakultas MIPA Universitas Negeri Padang Instrumen XRF PANalytical Epsilon 3						
Nama Sampel :		abu t jagung			Tanggal analisa:		21-Jan-25	
Costumer:		Predy Fernandes Sihaloho			Analisis:		Herawati desi Putri	
Email:								
Elemen			Geology			Oxides		
Compoun	Conc	Unit	Compoun	Conc	Unit	Compoun	Conc	Unit
Mg	2,015	%	MgO	2,007	%	MgO	2,012	%
Si	31,336	%	SiO2	46,523	%	SiO2	46,406	%
P	5,711	%	P2O5	8,131	%	P2O5	8,105	%
S	4,165	%	SO3	6,266	%	SO3	6,244	%
Cl	1,794	%	Cl	1,046	%	K2O	16,338	%
K	25,778	%	K2O	16,412	%	CaO	15,401	%
Ca	22,346	%	CaO	15,474	%	TiO2	0,527	%
Ti	0,682	%	Ti	0,318	%	V2O5	0	%
V	0	%	V	0	%	Cr2O3	0,011	%
Cr	0,016	%	Cr	0,007	%	MnO	0,225	%
Mn	0,38	%	Mn	0,175	%	Fe2O3	3,309	%
Fe	5,072	%	Fe2O3	3,326	%	CuO	0,132	%
Cu	0,237	%	Cu	0,106	%	ZnO	0,049	%
Zn	0,088	%	Zn	0,039	%	Rb2O	0,071	%
Br	0,012	%	Br	0,005	%	SrO	0,059	%
Rb	0,148	%	Rb	0,066	%	Y2O3	0,003	%
Sr	0,112	%	Sr	0,05	%	ZrO2	0,062	%
Y	0,005	%	Y	0,002	%	Cl	1,042	%
Zr	0,104	%	Zr	0,046	%	Br	0,005	%
Ket.	Element:	dihitung sebagai unsur						
	Geology :	keadaan alami sampel						
	Oxides :	dihitung sebagai oksida			Padang. 21 Januari 2025			
					Operator Alat XRF			
								
					Herawati Desi Putri			
					NIP.19780417 199903 2 002			