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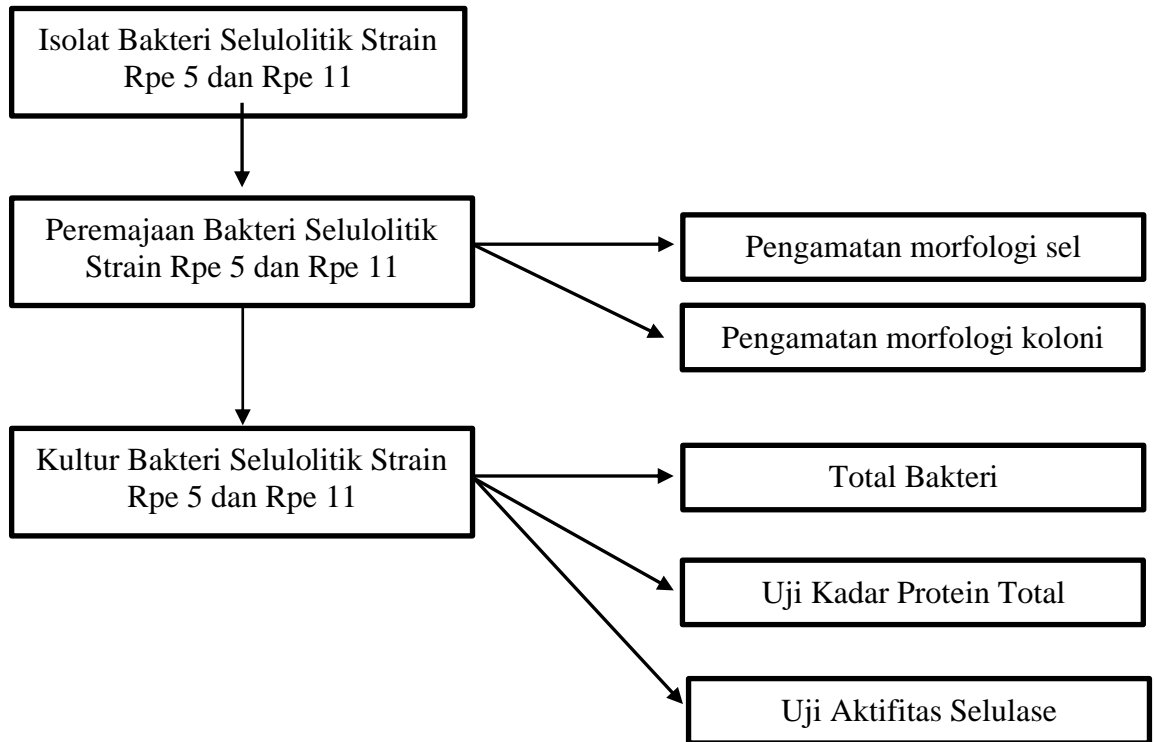
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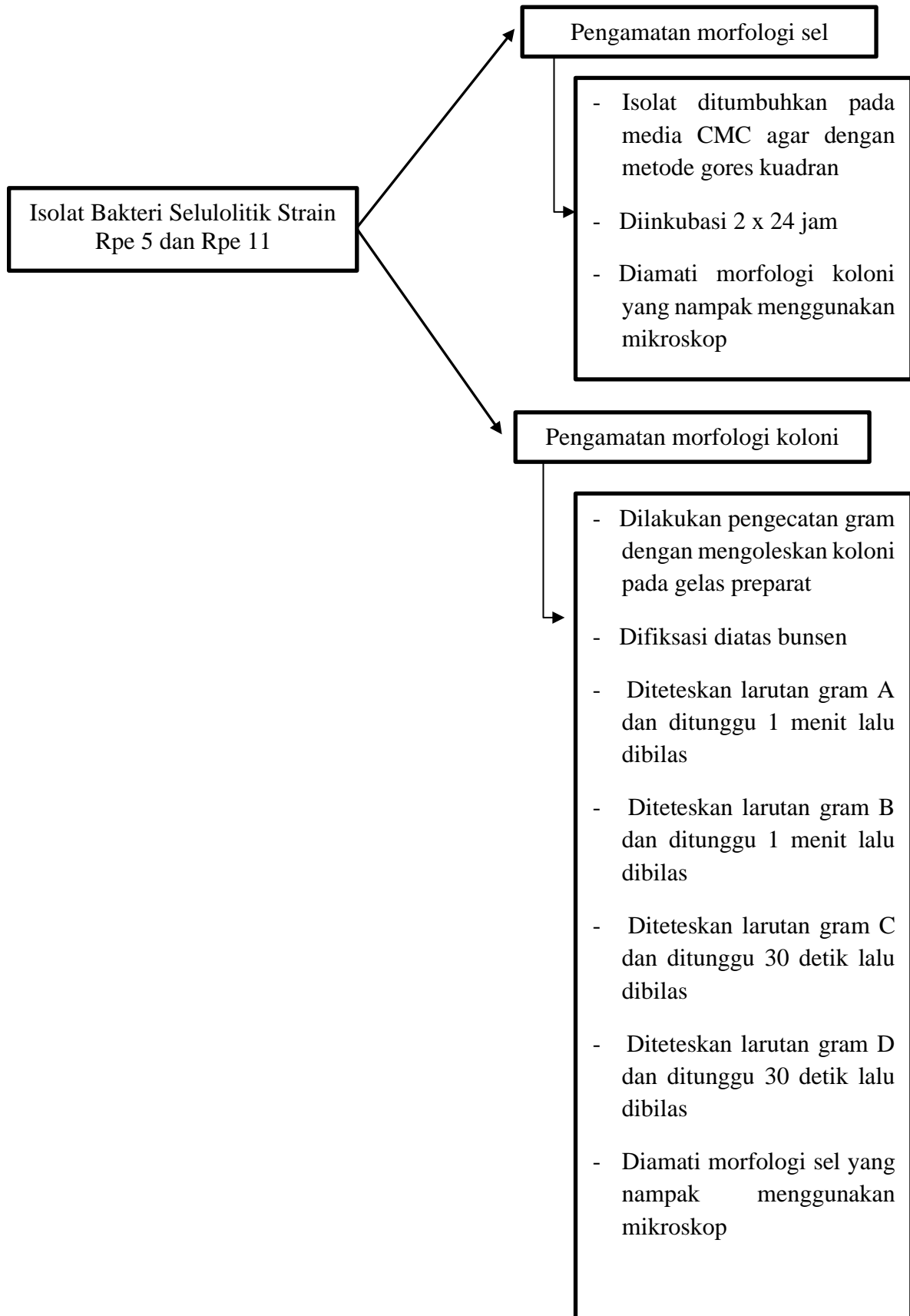
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**Lampiran 1. Skema Kerja**

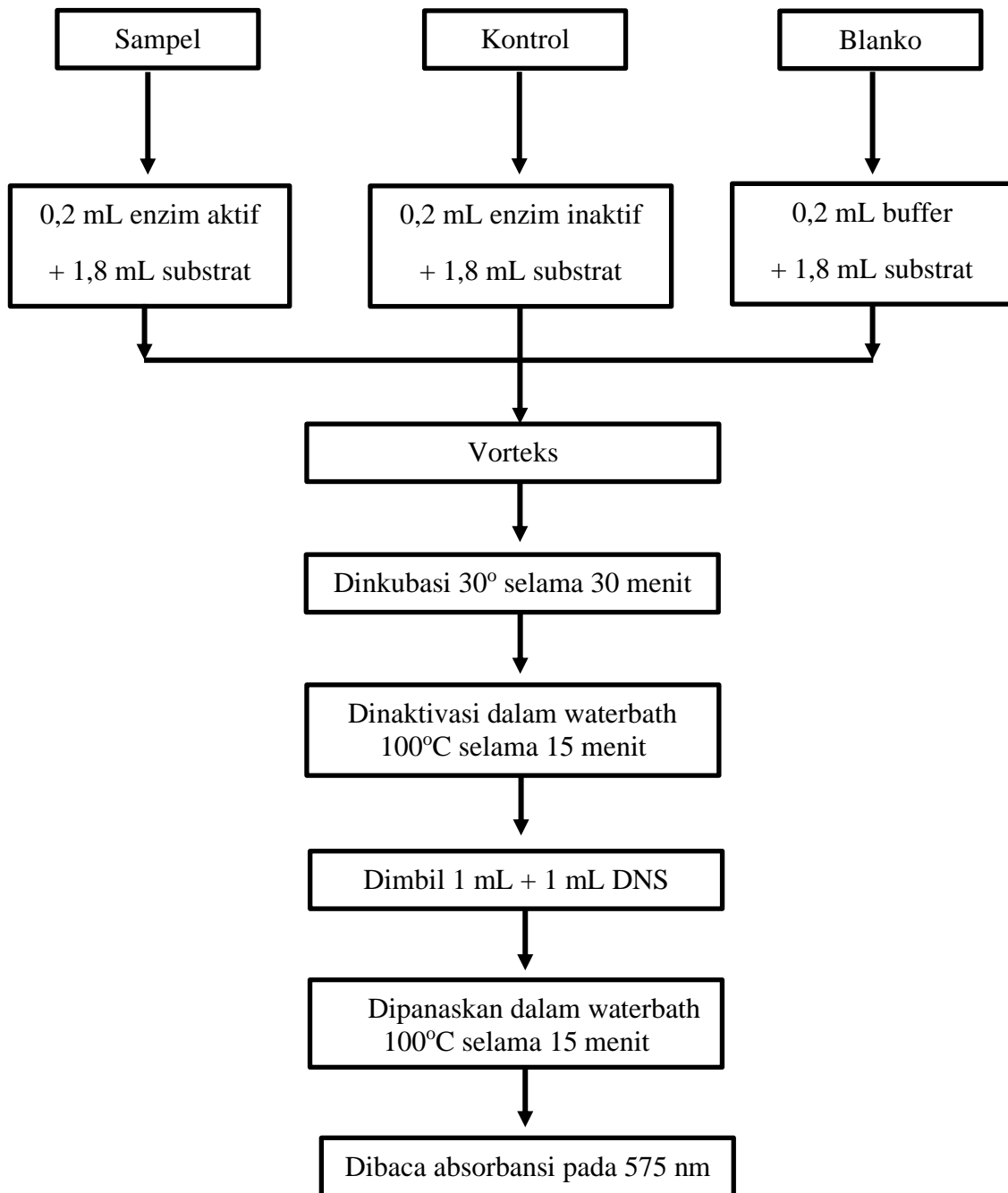


## Lampiran 2. Peremajaan Bakteri Selulolitik

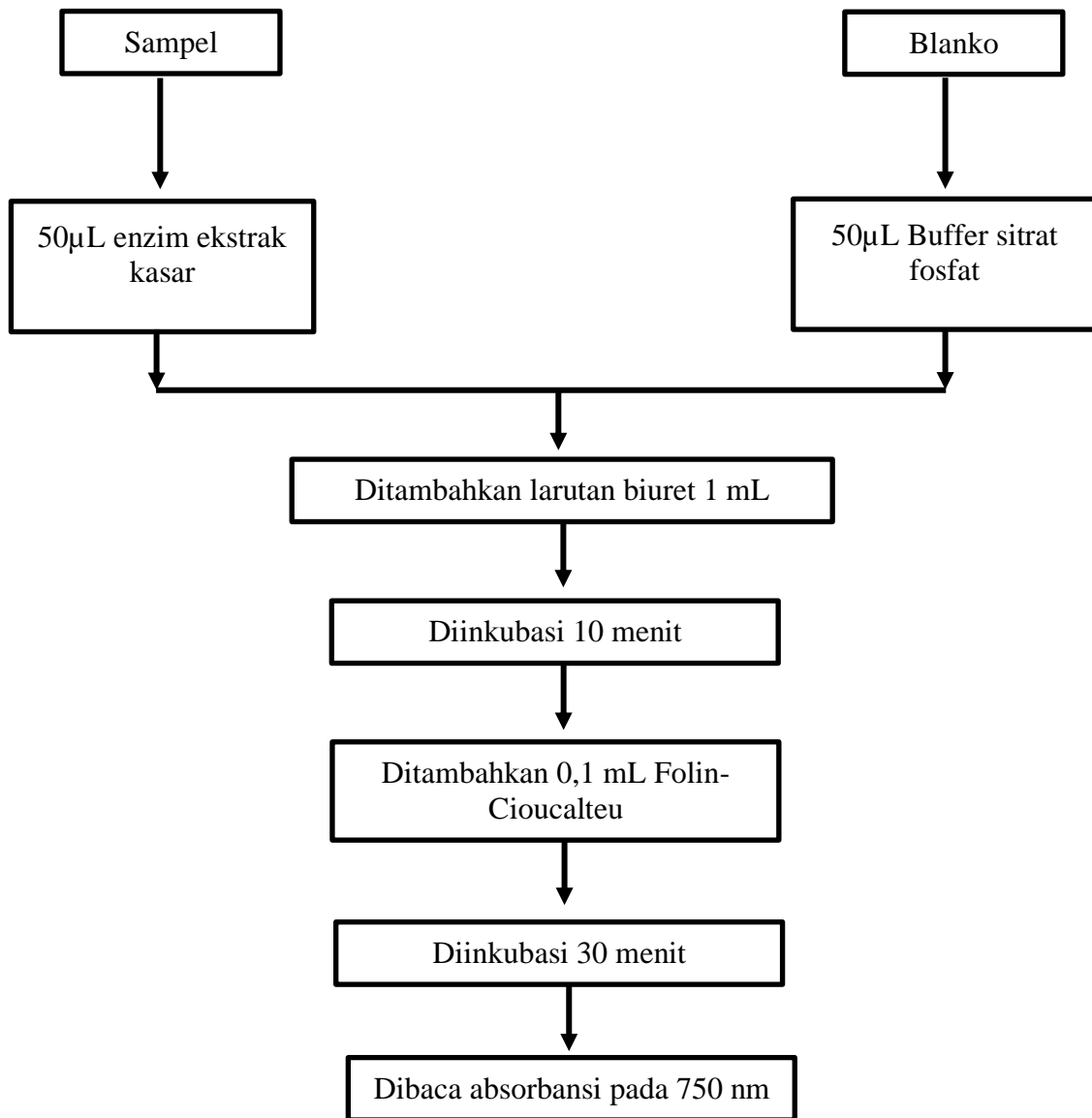




### Lampiran 3. Uji Aktifitas Enzim Selulase



#### Lampiran 4. Perhitungan Kadar Protein Total



**Lampiran 5. Hasil Perhitungan**

**Tabel 3. Hasil Perhitungan Kurva Pertumbuhan**

Sampel	%T (%)	A
Rpe5 T <sup>0</sup>	99	0.01
Rpe5 T <sup>1</sup>	90	0.05
Rpe5 T <sup>2</sup>	83	0.09
Rpe5 T <sup>3</sup>	70	0.16
Rpe5 T <sup>4</sup>	60	0.23
Rpe5 T <sup>5</sup>	35	0.46
Rpe5 T <sup>6</sup>	29	0.54
Rpe5 T <sup>7</sup>	22	0.66
Rpe5 T <sup>8</sup>	21	0.68
Rpe5 T <sup>9</sup>	21	0.68
Rpe5 T <sup>10</sup>	19	0.73
Rpe5 T <sup>11</sup>	19	0.73
Rpe5 T <sup>12</sup>	19	0.73
Rpe 11 T <sup>0</sup>	99	0.01
Rpe 11 T <sup>1</sup>	95	0.03
Rpe 11 T <sup>2</sup>	77	0.12
Rpe 11 T <sup>3</sup>	65	0.19
Rpe 11 T <sup>4</sup>	40	0.4
Rpe 11 T <sup>5</sup>	35	0.46
Rpe 11 T <sup>6</sup>	30	0.53
Rpe 11 T <sup>7</sup>	25	0.61
Rpe 11 T <sup>8</sup>	23	0.64
Rpe 11 T <sup>9</sup>	20	0.7
Rpe 11 T <sup>10</sup>	20	0.7
Rpe 11 T <sup>11</sup>	20	0.7
Rpe 11 T <sup>12</sup>	20	0.7

**Tabel 4. Hasil Perhitungan Total Bakteri**

Sampel	T0 (CFU)	T2 (CFU)	T4 (CFU)	T6 (CFU)	T8 (CFU)	T10 (CFU)	T12 (CFU)
Rpe 5	2,8 x 10 <sup>7</sup>	1,3 x 10 <sup>10</sup>	3,5 x 10 <sup>11</sup>	1,3 x 10 <sup>17</sup>	8,3 x 10 <sup>19</sup>	8,3 x 10 <sup>20</sup>	5,2 x 10 <sup>21</sup>
Rpe 11	2,7 x 10 <sup>7</sup>	1,5 x 10 <sup>11</sup>	4,3 x 10 <sup>11</sup>	7,3 x 10 <sup>15</sup>	9,5 x 10 <sup>19</sup>	3,2 x 10 <sup>20</sup>	3 x 10 <sup>20</sup>

## Lampiran 6. Perhitungan Kadar Protein Total

$$x = \frac{y - 0,1455}{1,285}$$

X = kadar protein

Y = absorbansi

### Pengamatan H1

$$\text{Rpe 5 H1 Simplo} = \frac{0,193 - 0,1455}{1,285} = 1,85 \text{ mg/mL}$$

$$\text{Rpe 5 H1 Duplo} = \frac{0,197 - 0,1455}{1,285} = 2,00 \text{ mg/mL}$$

$$\text{Protein terukur rerata Rpe 5} = \frac{1,85 + 2,00}{2} = 1,93 \text{ mg/mL}$$

$$\text{Rpe 11 H1 Simplo} = \frac{1,96 - 0,1455}{1,285} = 1,85 \text{ mg/mL}$$

$$\text{Rpe 11 H1 Duplo} = \frac{2,00 - 0,1455}{1,285} = 1,85 \text{ mg/mL}$$

$$\text{Protein terukur rerata Rpe 11} = \frac{1,85 + 2,00}{2} = 1,98 \text{ mg/mL}$$

### Pengamatan H6

$$\text{Rpe 5 H6 Simplo} = \frac{0,192 - 0,1455}{1,285} = 1,81 \text{ mg/mL}$$

$$\text{Rpe 5 H6 Duplo} = \frac{0,194 - 0,1455}{1,285} = 1,89 \text{ mg/mL}$$

$$\text{Protein terukur rerata Rpe 5} = \frac{1,81 + 1,89}{2} = 1,85 \text{ mg/mL}$$

$$\text{Rpe 11 H6 Simplo} = \frac{2,86 - 0,1455}{1,285} = 1,85 \text{ mg/mL}$$

$$\text{Rpe 11 H6 Duplo} = \frac{2,86 - 0,1455}{1,285} = 1,85 \text{ mg/mL}$$

$$\text{Protein terukur rerata Rpe 11} = \frac{1,81 + 1,89}{2} = 1,85 \text{ mg/mL}$$

### Pengamatan H12

$$\text{Rpe 5 H12 Simplo} = \frac{0,171 - 0,1455}{1,285} = 0,99 \text{ mg/mL}$$

$$\text{Rpe 5 H12 Duplo} = \frac{0,168 - 0,1455}{1,285} = 0,88 \text{ mg/mL}$$

$$\text{Protein terukur rerata Rpe 5} = \frac{0,99+0,88}{2} = 0,93 \text{ mg/mL}$$

$$\text{Rpe 5 H1 Simplo} = \frac{y-0,1455}{1,285} = 1,85 \text{ mg/mL}$$

$$\text{Rpe 11 H6 Duplo} = \frac{2,86-0,1455}{1,285} = 1,85 \text{ mg/mL}$$

$$\text{Protein terukur rerata Rpe 11} = \frac{1,81+1,89}{2} = 1,85 \text{ mg/mL}$$

**Tabel 5.** Hasil Perhitungan Kadar Protein Total

Kode sampel	Absorbansi	FP	Protein terukur (mg/mL)	Protein terukur Rerata (mg/mL)
Rpe 5 H1 Simplo	0.193	50	1.85	1.93
Rpe 5 H1 Duplo	0.197	50	2.00	
Rpe 5 H3 Simplo	0.192	50	1.81	1.85
Rpe 5 H3 Duplo	0.194	50	1.89	
Rpe 5 H4 Simplo	0.171	50	0.99	0.93
Rpe 5 H4 Duplo	0.168	50	0.88	
Rpe 11 H1 Simplo	0.196	50	1.96	1.98
Rpe 11 H1 Duplo	0.197	50	2.00	
Rpe 11 H3 Simplo	0.219	50	2.86	2.86
Rpe 11 H3 Duplo	0.219	50	2.86	
Rpe 11 H4 Simplo	0.178	50	1.26	1.46
Rpe 11 H4 Duplo	0.188	50	1.65	

### Lampiran 7. Perhitungan Kadar Glukosa

$$x = \frac{(y_{\text{sampel}} - 0,0767) - (y_{\text{kontrol}} - 0,0767)}{13,25}$$

X = kadar protein

Y = absorbansi

#### Pengamatan H1

$$\text{Rpe 5} = \frac{(0,330 - 0,0767) - (0,197 - 0,0767)}{13,25} = 0,0100$$

$$\text{Rpe 11} = \frac{(0,319 - 0,0767) - (0,272 - 0,0767)}{13,25} = 0,0035$$

#### Pengamatan H6

$$\text{Rpe 5} = \frac{(0,249 - 0,0767) - (0,122 - 0,0767)}{13,25} = 0,0103$$

$$\text{Rpe 11} = \frac{(0,273 - 0,0767) - (0,194 - 0,0767)}{13,25} = 0,0060$$

#### Pengamatan H12

$$\text{Rpe 5} = \frac{(0,207 - 0,0767) - (0,123 - 0,0767)}{13,25} = 0,0063$$

$$\text{Rpe 11} = \frac{(0,210 - 0,0767) - (0,106 - 0,0767)}{13,25} = 0,0078$$

**Tabel 6.** Hasil Perhitungan Kadar Glukosa

Kode Sampel	Absorbansi		[Glukosa] (mg/mL)
	Sampel	Kontrol	
Rpe 5 H1	0.330	0.197	0.0100
Rpe 5 H3	0.249	0.112	0.0103
Rpe 5 H4	0.207	0.123	0.0063
Rpe 11 H1	0.319	0.272	0.0035
Rpe 11 H3	0.273	0.194	0.0060
Rpe 11 H4	0.210	0.106	0.0078

## Lampiran 8. Perhitungan Aktifitas Selulase

$$x = \frac{\text{Nilai Kadar Glukosa} \times \text{FP}}{\text{Waktu Inkubasi} \times \text{BM Glukosa}}$$

x = Nilai aktifitas selulase

FP (Faktor Pengenceran) = 1000

Waktu inkubasi = 30 menit

BM glukosa = 180,0 mg/mL

### Pengamatan H1

$$\text{Rpe 5} = \frac{0,0100 \times 1000}{30 \times 180} = 0,0018588 = 1,8588 \text{ U/mL}$$

$$\text{Rpe 11} = \frac{0,0035 \times 1000}{30 \times 180} = 0,0006569 = 0,6569 \text{ U/mL}$$

### Pengamatan H6

$$\text{Rpe 5} = \frac{0,0103 \times 1000}{30 \times 180} = 0,0019147 = 1,9147 \text{ U/mL}$$

$$\text{Rpe 11} = \frac{0,0060 \times 1000}{30 \times 180} = 0,0011041 = 1,1041 \text{ U/mL}$$

### Pengamatan H12

$$\text{Rpe 5} = \frac{0,0063 \times 1000}{30 \times 180} = 0,0011740 = 1,1740 \text{ U/mL}$$

$$\text{Rpe 11} = \frac{0,0058 \times 1000}{30 \times 180} = 0,0010741 = 1,0741 \text{ m/mL}$$

**Tabel 7.** Hasil Perhitungan Aktifitas Enzim

Kode Sampel	[Glukosa] (mg/mL)	Aktivitas Enzim (U/mL)
Rpe 5 H1	0.0100	1.8588
Rpe 5 H3	0.0103	1.9147
Rpe 5 H4	0.0063	1.1740
Rpe 11 H1	0.0035	0.6569
Rpe 11 H3	0.0060	1.1041
Rpe 11 H4	0.0058	1.0741

## Lampiran 9. Perhitungan Nilai Aktifitas Spesifik

$$\text{Nilai Aktifitas Spesifik} = \frac{\text{Aktifitas Enzim Selulase}}{\text{Kadar Protein Total}}$$

### Pengamatan H1

$$\text{Rpe 5} = \frac{1,8588}{1,92611} = 0,96509 \text{ U/mL}$$

$$\text{Rpe 11} = \frac{0,6569}{1,98441} = 0,33102 \text{ U/mL}$$

### Pengamatan H6

$$\text{Rpe 5} = \frac{1,9147}{1,8482} = 1,03598 \text{ U/mL}$$

$$\text{Rpe 11} = \frac{1,1041}{2,8599} = 0,38607 \text{ U/mL}$$

### Pengamatan H12

$$\text{Rpe 5} = \frac{1,1740}{0,9339} = 1,25716 \text{ U/mL}$$

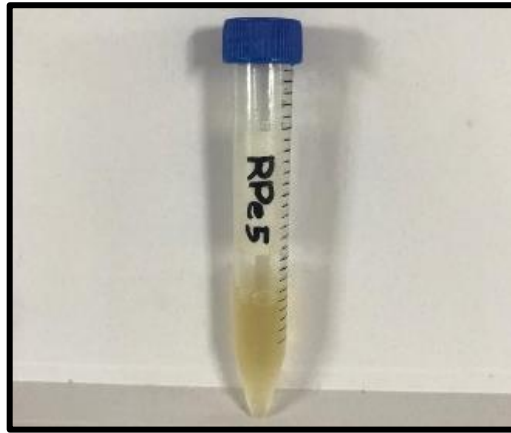
$$\text{Rpe 11} = \frac{1,0741}{1,4591} = 0,73610 \text{ U/mL}$$

**Tabel 8.** Hasil Perhitungan Nilai Aktifitas Spesifik Enzim

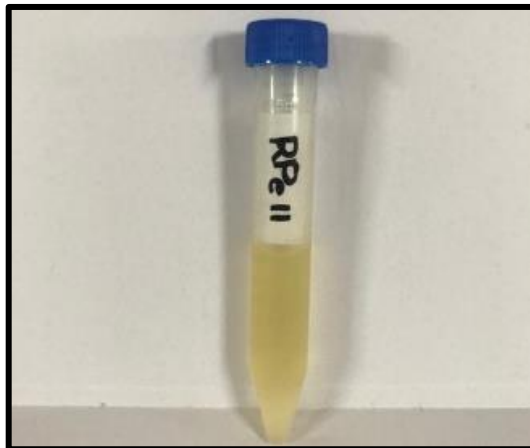
Kode Sampel	Aktivitas Spesifik (U/mL)
Rpe 5 H1	0.96509
Rpe 5 H3	1.03598
Rpe 5 H4	1.25716
Rpe 11 H1	0.33102
Rpe 11 H3	0.38607
Rpe 11 H4	0.73610



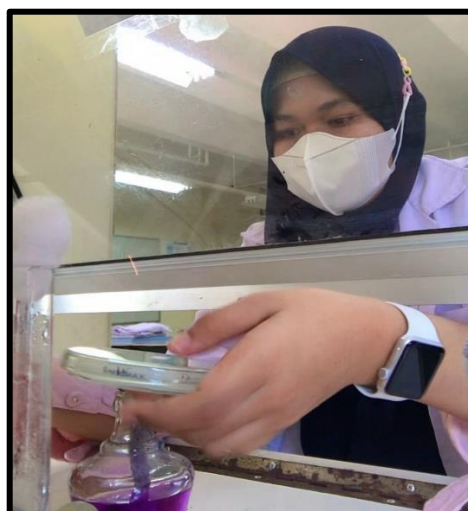
**Lampiran 10.** Foto Prosedur Penelitian



Isolat Bakteri Rpe 5



Isolat Bakteri Rpe 11



Proses Peremajaan Bakteri Selulolitik Strain Rpe 5 dan Rpe 11

**Lampiran 11.** Foto Kultur Bakteri Selulolitik Rpe 5 dan Rpe 11



Isolat Rpe 5 pada hari ke-0



Isolat Rpe 11 pada hari ke-0



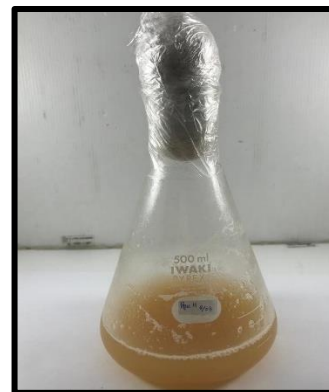
Isolat Rpe 5 pada hari ke-6



Isolat Rpe 11 pada hari ke-6



Isolat Rpe 5 pada hari ke-12

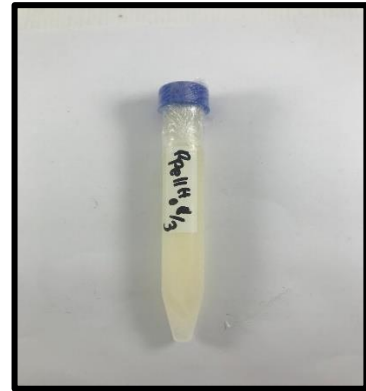


Isolat Rpe 11 pada hari ke-12

**Lampiran 12.** Foto Ekstrak Kasar Enzim Selulase Isolat Bakteri Rpe 5 dan Rpe 11



Enzim ekstrak kasar isolat  
Rpe 5 H<sub>0</sub>



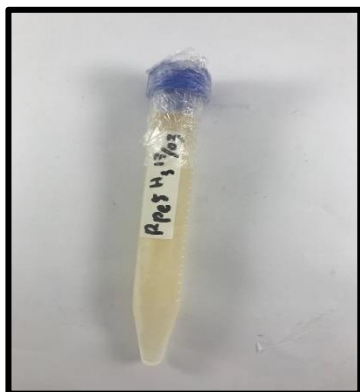
Enzim ekstrak kasar isolat  
Rpe 11 H<sub>0</sub>



Enzim ekstrak kasar isolat  
Rpe 5 H<sub>6</sub>



Enzim ekstrak kasar isolat  
Rpe 11 H<sub>6</sub>



Enzim ekstrak kasar isolat  
Rpe 5 H<sub>12</sub>



Enzim ekstrak kasar isolat  
Rpe 11 H<sub>12</sub>

Lampiran 13. Foto Hasil Pengujian



Uji Kadar Protein Terlarut



Uji Aktifitas Enzim Selulase