

## LAMPIRAN

### Lampiran 1

#### A. Pembuatan Pati Bonggol Pisang



Pengambilan bonggol pisang



Bonggol pisang



Pembersihan bonggol pisang



Perendaman bonggol pisang dengan natrium bisulfit



Penghalusan bonggol pisang dengan parutan kelapa



Bonggol pisang yang telah halus



Pemerasan bonggol pisang yang telah halus dan di ambil air hasil perasanya saja



Air hasil pemerasan bonggol pisang



Endapan pati bonggol pisang



Pati bonggol pisang yang sudah kering

## B. Pembuatan Selulosa



Ampas bonggo pisang yang telah di keringkan



Perlakuan basa



Pemucatan



Perlakuan asam



Proses penghalusan



Selulosa bonggol pisang

### C. Pembuatan Bioplastik



Selulosa



Pati



Gliserol



Pemasakan bioplastik



Bioplastik basah



Bioplastik kering



Sampel bioplastik



Ketebalan bioplastik

#### D. Uji Ketahanan Air



Massa awal



Perendaman selama 20 detik



Massa akhir



Massa awal



Perendaman selama 20 detik



Massa akhir

### E. Uji Biodegradabilitas



Hari 1



Hari 2



Hari 3



Hari 4



Hari 5

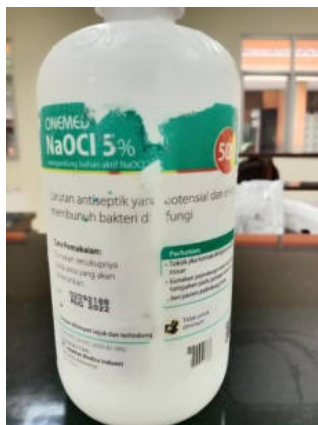
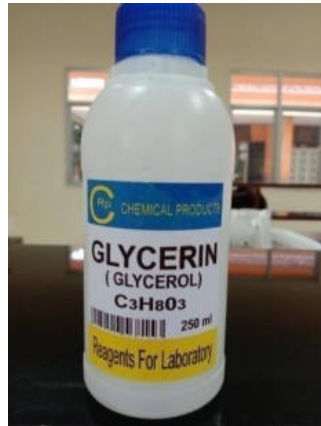


Hari 6



Hari 7

## F. Bahan-bahan



## G. Dokumentasi Penelitian



## Lampiran 2

### Univariate Analysis of Variance

#### Between-Subjects Factors

|                            |   | Value Label | N  |
|----------------------------|---|-------------|----|
| Variasi komposisi pati     | 1 | 3 gram      | 12 |
|                            | 2 | 4 gram      | 12 |
|                            | 3 | 5 gram      | 12 |
| Variasi komposisi selulosa | 1 | 0 kontrol   | 9  |
|                            | 2 | 1 gram      | 9  |
|                            | 3 | 2 gram      | 9  |
|                            | 4 | 3 gram      | 9  |

#### Descriptive Statistics

Dependent Variable: Uji Biodegradabilitas

| Variasi komposisi pati | Mean | Std. Deviation | N  |
|------------------------|------|----------------|----|
| 3 gram                 | 6.75 | .622           | 12 |
| 4 gram                 | 5.50 | .798           | 12 |
| 5 gram                 | 4.00 | 1.128          | 12 |
| Total                  | 5.42 | 1.422          | 36 |

### Descriptive Statistics

Dependent Variable: Uji Biodegradabilitas

| Variasi komposisi selulosa | Mean | Std. Deviation | N  |
|----------------------------|------|----------------|----|
| 0 kontrol                  | 6.00 | 1.118          | 9  |
| 1 gram                     | 5.67 | 1.414          | 9  |
| 2 gram                     | 5.33 | 1.581          | 9  |
| 3 gram                     | 4.67 | 1.414          | 9  |
| Total                      | 5.42 | 1.422          | 36 |

### Descriptive Statistics

Dependent Variable: Uji Biodegradabilitas

| Variasi komposisi pati | Variasi komposisi selulosa | Mean | Std. Deviation | N  |
|------------------------|----------------------------|------|----------------|----|
| 3 gram                 | 0 kontrol                  | 7.00 | .000           | 3  |
|                        | 1 gram                     | 7.00 | .000           | 3  |
|                        | 2 gram                     | 7.00 | .000           | 3  |
|                        | 3 gram                     | 6.00 | 1.000          | 3  |
|                        | Total                      | 6.75 | .622           | 12 |
| 4 gram                 | 0 kontrol                  | 6.00 | 1.000          | 3  |
|                        | 1 gram                     | 6.00 | 1.000          | 3  |

|        |           |      |       |    |
|--------|-----------|------|-------|----|
|        | 2 gram    | 5.00 | .000  | 3  |
|        | 3 gram    | 5.00 | .000  | 3  |
|        | Total     | 5.50 | .798  | 12 |
| 5 gram | 0 kontrol | 5.00 | 1.000 | 3  |
|        | 1 gram    | 4.00 | .000  | 3  |
|        | 2 gram    | 4.00 | 1.732 | 3  |
|        | 3 gram    | 3.00 | .000  | 3  |
|        | Total     | 4.00 | 1.128 | 12 |
| Total  | 0 kontrol | 6.00 | 1.118 | 9  |
|        | 1 gram    | 5.67 | 1.414 | 9  |
|        | 2 gram    | 5.33 | 1.581 | 9  |
|        | 3 gram    | 4.67 | 1.414 | 9  |
|        | Total     | 5.42 | 1.422 | 36 |

### Tests of Between-Subjects Effects

Dependent Variable: Uji Biodegradabilitas

| Source          | Type III Sum of Squares | df | Mean Square | F       | Sig. | Partial Eta Squared |
|-----------------|-------------------------|----|-------------|---------|------|---------------------|
| Corrected Model | 56.750 <sup>a</sup>     | 11 | 5.159       | 8.844   | .000 | .802                |
| Intercept       | 1056.250                | 1  | 1056.250    | 1.811E3 | .000 | .987                |
| Pati            | 45.500                  | 2  | 22.750      | 39.000  | .000 | .765                |
| Selulosa        | 8.750                   | 3  | 2.917       | 5.000   | .008 | .385                |
| Pati * Selulosa | 2.500                   | 6  | .417        | .714    | .642 | .152                |
| Error           | 14.000                  | 24 | .583        |         |      |                     |
| Total           | 1127.000                | 36 |             |         |      |                     |
| Corrected Total | 70.750                  | 35 |             |         |      |                     |

### Post Hoc Tests

#### Variasi komposisi pati

#### Multiple Comparisons

Uji Biodegradabilitas

Tukey HSD

| (I) Variasi komposisi pati | (J) Variasi komposisi pati | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval |             |
|----------------------------|----------------------------|-----------------------|------------|------|-------------------------|-------------|
|                            |                            |                       |            |      | Lower Bound             | Upper Bound |
| 3 gram                     | 4 gram                     | 1.25 <sup>*</sup>     | .312       | .001 | .47                     | 2.03        |
|                            | 5 gram                     | 2.75 <sup>*</sup>     | .312       | .000 | 1.97                    | 3.53        |
| 4 gram                     | 3 gram                     | -1.25 <sup>*</sup>    | .312       | .001 | -2.03                   | -.47        |
|                            | 5 gram                     | 1.50 <sup>*</sup>     | .312       | .000 | .72                     | 2.28        |

|        |        |        |      |      |       |       |
|--------|--------|--------|------|------|-------|-------|
| 5 gram | 3 gram | -2.75* | .312 | .000 | -3.53 | -1.97 |
|        | 4 gram | -1.50* | .312 | .000 | -2.28 | -.72  |

Based on observed means.

The error term is Mean Square(Error) = ,583.

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

## Homogeneous Subsets

### Uji Biodegradabilitas

Tukey HSD

| Variasi komposisi pati | N  | Subset |       |       |
|------------------------|----|--------|-------|-------|
|                        |    | 1      | 2     | 3     |
| 5 gram                 | 12 | 4.00   |       |       |
| 4 gram                 | 12 |        | 5.50  |       |
| 3 gram                 | 12 |        |       | 6.75  |
| Sig.                   |    | 1.000  | 1.000 | 1.000 |

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = ,583.

## Variasi komposisi selulosa

### Multiple Comparisons

Uji Biodegradabilitas

Tukey HSD

| (I) Variasi komposisi selulosa | (J) Variasi komposisi selulosa | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval |             |
|--------------------------------|--------------------------------|-----------------------|------------|------|-------------------------|-------------|
|                                |                                |                       |            |      | Lower Bound             | Upper Bound |
| 0 kontrol                      | 1 gram                         | .33                   | .360       | .791 | -.66                    | 1.33        |
|                                | 2 gram                         | .67                   | .360       | .275 | -.33                    | 1.66        |
|                                | 3 gram                         | 1.33*                 | .360       | .006 | .34                     | 2.33        |
| 1 gram                         | 0 kontrol                      | -.33                  | .360       | .791 | -1.33                   | .66         |
|                                | 2 gram                         | .33                   | .360       | .791 | -.66                    | 1.33        |
|                                | 3 gram                         | 1.00*                 | .360       | .048 | .01                     | 1.99        |
| 2 gram                         | 0 kontrol                      | -.67                  | .360       | .275 | -1.66                   | .33         |
|                                | 1 gram                         | -.33                  | .360       | .791 | -1.33                   | .66         |
|                                | 3 gram                         | .67                   | .360       | .275 | -.33                    | 1.66        |
| 3 gram                         | 0 kontrol                      | -1.33*                | .360       | .006 | -2.33                   | -.34        |
|                                | 1 gram                         | -1.00*                | .360       | .048 | -1.99                   | .00         |
|                                | 2 gram                         | -.67                  | .360       | .275 | -1.66                   | .33         |

Based on observed means.

The error term is Mean Square(Error) = ,583.

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

## Homogeneous Subsets

### Uji Biodegradabilitas

Tukey HSD

| Variasi komposisi selulosa | N | Subset |      |
|----------------------------|---|--------|------|
|                            |   | 1      | 2    |
| 3 gram                     | 9 | 4.67   |      |
| 2 gram                     | 9 | 5.33   | 5.33 |
| 1 gram                     | 9 |        | 5.67 |
| 0 kontrol                  | 9 |        | 6.00 |
| Sig.                       |   | .275   | .275 |

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = ,583.

## Univariate Analysis of Variance

### Descriptive Statistics

Dependent Variable: Uji ketahanan air

| Variasi komposisi pati | Mean  | Std. Deviation | N  |
|------------------------|-------|----------------|----|
| 3 gram                 | .0867 | .03229         | 12 |
| 4 gram                 | .1442 | .01443         | 12 |
| 5 gram                 | .1750 | .02812         | 12 |
| Total                  | .1353 | .04494         | 36 |

### Descriptive Statistics

Dependent Variable: Uji ketahanan air

| Variasi<br>komposisi<br>selulosa | Mean  | Std. Deviation | N  |
|----------------------------------|-------|----------------|----|
| 0 kontrol                        | .1211 | .04936         | 9  |
| 1 gram                           | .1322 | .04604         | 9  |
| 2 gram                           | .1400 | .04822         | 9  |
| 3 gram                           | .1478 | .03898         | 9  |
| Total                            | .1353 | .04494         | 36 |

### Descriptive Statistics

Dependent Variable: Uji ketahanan air

| Variasi<br>komposisi pati | Variasi<br>komposisi<br>selulosa | Mean  | Std. Deviation | N  |
|---------------------------|----------------------------------|-------|----------------|----|
| 3 gram                    | 0 kontrol                        | .0700 | .03606         | 3  |
|                           | 1 gram                           | .0833 | .04041         | 3  |
|                           | 2 gram                           | .0867 | .02887         | 3  |
|                           | 3 gram                           | .1067 | .03055         | 3  |
|                           | Total                            | .0867 | .03229         | 12 |
| 4 gram                    | 0 kontrol                        | .1300 | .01000         | 3  |
|                           | 1 gram                           | .1433 | .01528         | 3  |

|        |           |       |        |    |
|--------|-----------|-------|--------|----|
|        | 2 gram    | .1533 | .01528 | 3  |
|        | 3 gram    | .1500 | .01000 | 3  |
|        | Total     | .1442 | .01443 | 12 |
| 5 gram | 0 kontrol | .1633 | .04041 | 3  |
|        | 1 gram    | .1700 | .02646 | 3  |
|        | 2 gram    | .1800 | .03606 | 3  |
|        | 3 gram    | .1867 | .01528 | 3  |
|        | Total     | .1750 | .02812 | 12 |
| Total  | 0 kontrol | .1211 | .04936 | 9  |
|        | 1 gram    | .1322 | .04604 | 9  |
|        | 2 gram    | .1400 | .04822 | 9  |
|        | 3 gram    | .1478 | .03898 | 9  |
|        | Total     | .1353 | .04494 | 36 |

### Tests of Between-Subjects Effects

Dependent Variable: Uji ketahanan air

| Source          | Type III Sum of Squares | df | Mean Square | F       | Sig. | Partial Eta Squared |
|-----------------|-------------------------|----|-------------|---------|------|---------------------|
| Corrected Model | .052 <sup>a</sup>       | 11 | .005        | 6.171   | .000 | .739                |
| Intercept       | .659                    | 1  | .659        | 856.206 | .000 | .973                |
| Pati            | .048                    | 2  | .024        | 31.347  | .000 | .723                |
| Selulosa        | .003                    | 3  | .001        | 1.515   | .236 | .159                |

|                 |      |    |          |      |      |      |
|-----------------|------|----|----------|------|------|------|
| Pati * Selulosa | .000 | 6  | 8.241E-5 | .107 | .995 | .026 |
| Error           | .018 | 24 | .001     |      |      |      |
| Total           | .730 | 36 |          |      |      |      |
| Corrected Total | .071 | 35 |          |      |      |      |

a. R Squared = ,739 (Adjusted R Squared = ,619)

## Post Hoc Tests

### Variasi komposisi pati

#### Multiple Comparisons

Uji ketahanan air

Tukey HSD

| (I) Variasi<br>komposisi<br>pati | (J) Variasi<br>komposisi<br>pati | Mean Difference<br>(I-J) | Std. Error | Sig. | 95% Confidence Interval |             |
|----------------------------------|----------------------------------|--------------------------|------------|------|-------------------------|-------------|
|                                  |                                  |                          |            |      | Lower Bound             | Upper Bound |
| 3 gram                           | 4 gram                           | -.0575*                  | .01132     | .000 | -.0858                  | -.0292      |
|                                  | 5 gram                           | -.0883*                  | .01132     | .000 | -.1166                  | -.0601      |
| 4 gram                           | 3 gram                           | .0575*                   | .01132     | .000 | .0292                   | .0858       |
|                                  | 5 gram                           | -.0308*                  | .01132     | .031 | -.0591                  | -.0026      |
| 5 gram                           | 3 gram                           | .0883*                   | .01132     | .000 | .0601                   | .1166       |
|                                  | 4 gram                           | .0308*                   | .01132     | .031 | .0026                   | .0591       |

Based on observed means.

The error term is Mean Square(Error) = ,001.

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

## Homogeneous Subsets

### Uji ketahanan air

Tukey HSD

| Variasi<br>komposisi<br>pati | N  | Subset |       |       |
|------------------------------|----|--------|-------|-------|
|                              |    | 1      | 2     | 3     |
| 3 gram                       | 12 | .0867  |       |       |
| 4 gram                       | 12 |        | .1442 |       |
| 5 gram                       | 12 |        |       | .1750 |
| Sig.                         |    | 1.000  | 1.000 | 1.000 |

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = ,001.

### Variasi komposisi selulosa

#### Multiple Comparisons

Uji ketahanan air

Tukey HSD

| (I) Variasi<br>komposisi<br>selulosa | (J) Variasi<br>komposisi<br>selulosa | Mean Difference<br>(I-J) | Std. Error | Sig. | 95% Confidence Interval |             |
|--------------------------------------|--------------------------------------|--------------------------|------------|------|-------------------------|-------------|
|                                      |                                      |                          |            |      | Lower Bound             | Upper Bound |
| 0 kontrol                            | 1 gram                               | -.0111                   | .01308     | .830 | -.0472                  | .0250       |
|                                      | 2 gram                               | -.0189                   | .01308     | .485 | -.0550                  | .0172       |
|                                      | 3 gram                               | -.0267                   | .01308     | .202 | -.0627                  | .0094       |
| 1 gram                               | 0 kontrol                            | .0111                    | .01308     | .830 | -.0250                  | .0472       |

|        |           |        |        |      |        |       |
|--------|-----------|--------|--------|------|--------|-------|
| 2 gram |           | -.0078 | .01308 | .933 | -.0438 | .0283 |
| 3 gram |           | -.0156 | .01308 | .639 | -.0516 | .0205 |
| 2 gram | 0 kontrol | .0189  | .01308 | .485 | -.0172 | .0550 |
|        | 1 gram    | .0078  | .01308 | .933 | -.0283 | .0438 |
|        | 3 gram    | -.0078 | .01308 | .933 | -.0438 | .0283 |
| 3 gram | 0 kontrol | .0267  | .01308 | .202 | -.0094 | .0627 |
|        | 1 gram    | .0156  | .01308 | .639 | -.0205 | .0516 |
|        | 2 gram    | .0078  | .01308 | .933 | -.0283 | .0438 |

Based on observed means.

The error term is Mean Square(Error) = ,001.

## Homogeneous Subsets

### Uji ketahanan air

Tukey HSD

| Variasi komposisi selulosa | N | Subset |
|----------------------------|---|--------|
|                            |   | 1      |
| 0 kontrol                  | 9 | .1211  |
| 1 gram                     | 9 | .1322  |
| 2 gram                     | 9 | .1400  |
| 3 gram                     | 9 | .1478  |
| Sig.                       |   | .202   |

### Lampiran 3

#### Hasil Uji Biodegradabilitas

| No | Sampel                   | Pengulangan<br>1 | Pengulangan<br>2 | Pengulangan<br>3 | Rata-rata |
|----|--------------------------|------------------|------------------|------------------|-----------|
| 1  | Pati 3 gr, selulosa 0    | 7 hari           | 7 hari           | 7 hari           | 7 hari    |
| 2  | Pati 3 gr, selulosa 1 gr | 6 hari           | 5 hari           | 7 hari           | 6 hari    |
| 3  | Pati 3 gr, selulosa 2 gr | 7 hari           | 7 hari           | 7 hari           | 7 hari    |
| 4  | Pati 3 gr, selulosa 3 gr | 6 hari           | 7 hari           | 5 hari           | 6 hari    |
| 5  | Pati 4 gr, selulosa 0    | 7 hari           | 5 hari           | 6 hari           | 6 hari    |
| 6  | Pati 4 gr, selulosa 1 gr | 5 hari           | 6 hari           | 7 hari           | 6 hari    |
| 7  | Pati 4 gr, selulosa 2 gr | 5 hari           | 5 hari           | 5 hari           | 5 hari    |
| 8  | Pati 4 gr, selulosa 3 gr | 5 hari           | 5 hari           | 5 hari           | 5 hari    |
| 9  | Pati 5 gr, selulosa 0    | 4 hari           | 5 hari           | 3 hari           | 4hari     |
| 10 | Pati 5 gr, selulosa 1 gr | 4 hari           | 4 hari           | 4 hari           | 4 hari    |
| 11 | Pati 5 gr, selulosa 2 gr | 3 hari           | 3 hari           | 6 hari           | 4 hari    |
| 12 | Pati 5 gr, selulosa 3 gr | 3 hari           | 3 hari           | 3 hari           | 3 hari    |

## Lampiran 4

### Hasil Uji Ketahanan Air

| No | Sampel                   | Pengulangan 1 |      | Pengulangan 2 |      | Pengulangan 3 |      | Rata-rata |      | Persentase |
|----|--------------------------|---------------|------|---------------|------|---------------|------|-----------|------|------------|
|    |                          | B             | S    | B             | S    | B             | S    | B         | S    |            |
| 1  | Pati 3 gr, selulosa 0    | 1,22          | 1,08 | 1,09          | 0,90 | 1,31          | 1,10 | 1,20      | 1,00 | 0,23       |
| 2  | Pati 3 gr, selulosa 1 gr | 1,16          | 0,96 | 1,05          | 0,89 | 1,24          | 1,16 | 1,15      | 1,00 | 0,13       |
| 3  | Pati 3 gr, selulosa 2 gr | 0,59          | 0,49 | 1,33          | 1,16 | 0,99          | 0,87 | 0,97      | 0,84 | 0,13       |
| 4  | Pati 3 gr, selulosa 3 gr | 0,78          | 0,75 | 0,81          | 0,67 | 0,87          | 0,78 | 0,82      | 0,73 | 0,1        |
| 5  | Pati 4 gr, selulosa 0    | 0,82          | 0,76 | 0,76          | 0,66 | 0,51          | 0,45 | 0,69      | 0,62 | 0,17       |
| 6  | Pati 4 gr, selulosa 1 gr | 1,20          | 1,04 | 1,00          | 0,85 | 0,98          | 0,90 | 1,06      | 0,93 | 0,12       |
| 7  | Pati 4 gr, selulosa 2 gr | 1,33          | 1,23 | 0,72          | 0,64 | 1,03          | 0,95 | 1,02      | 0,94 | 0,16       |
| 8  | Pati 4 gr, selulosa 3 gr | 1,16          | 0,96 | 1,05          | 0,89 | 1,24          | 1,16 | 1,15      | 1,00 | 0,13       |
| 9  | Pati 5 gr, selulosa 0    | 0,84          | 0,71 | 0,89          | 0,83 | 0,78          | 0,72 | 0,83      | 0,75 | 0,19       |
| 10 | Pati 5 gr, selulosa 1 gr | 1,66          | 1,07 | 1,04          | 1,00 | 0,72          | 0,59 | 1,14      | 0,88 | 0,16       |
| 11 | Pati 5 gr, selulosa 2 gr | 1,20          | 1,04 | 1,00          | 0,85 | 0,98          | 0,90 | 1,06      | 0,93 | 0,12       |
| 12 | Pati 5 gr, selulosa 3 gr | 1,30          | 1,23 | 0,73          | 0,61 | 0,78          | 0,71 | 0,93      | 0,85 | 0,09       |

Keterangan :

B : Sebelum direndam aquades

S : Sesudah direndam aquades

## Lampiran 5



**KEMENTERIAN KESEHATAN REPUBLIK INDONESIA**  
**BADAN PENGEMBANGAN DAN PEMBERDAYAAN**  
**SUMBER DAYA MANUSIA KESEHATAN**  
**POLITEKNIK KESEHATAN TANJUNGPUR**  
 Jalan Soekarno - Hatta No. 6 Bandar Lampung  
 Telp : 0721 - 783 852 Faksimile : 0721 - 773 918  
 Website : <http://poltekkes-tjk.ac.id> E-mail : [direktorat@poltekkes-tjk.ac.id](mailto:direktorat@poltekkes-tjk.ac.id)



Nomor : PP.03. 01 / I. 1 / 1818 /2022  
 Lampiran : ..... Eks  
 Hal : Izin Penelitian

28 Maret 2022

Yth, Ketua Jurusan Kesehatan Lingkungan  
 Di – Bandar Lampung

Sehubungan dengan penyusunan Skripsi bagi mahasiswa Tingkat IV Program Studi Sanitasi Lingkungan Program Sarjana Terapan Jurusan Kesehatan Lingkungan Politeknik Kesehatan Kementerian Kesehatan Tanjungpur Tahun Akademik 2021/2022, maka kami mengharapkan dapat diberikan izin kepada mahasiswa untuk dapat melakukan penelitian di Institusi yang Bpk/Ibu pimpin. Adapun mahasiswa yang melakukan penelitian sebagai berikut:

| No | NAMA                                | JUDUL PENELITIAN                                                                                                             | TEMPAT PENELITIAN                         |
|----|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| 1  | Fitriani Lestari<br>NIM: 1813351043 | Pemanfaatan Pati Dan Selulosa Dari Limbah Bonggol Pisang (Musa Paradisiaca L) Sebagai Bahan Baku Bioplastik                  | Laboratorium Jurusan Kesehatan Lingkungan |
| 2  | Icha Putri Tsany<br>NIM: 1813351001 | Pengaruh Infusa Batang Serai Dapur (Cymbopogon Citratus) Sebagai Larvasida Aedes Aegypti                                     |                                           |
| 3  | Dinda Agusti<br>NIM: 1813351007     | Efektivitas Ekstrak Buah Ceremai (Phyllanthus Acidus [L] Skeels) Sebagai Larvasida Pada Larva Aedes Aegypti Instar Iii       |                                           |
| 4  | Hernita<br>NIM: 1813351025          | Hubungan Perilaku Penjamah Makanan Terhadap Angka Kuman Makanan Di Rumah Makan Wilayah Kerja Uptd Puskesmas Natar Tahun 2022 |                                           |

Atas perhatian dan kerjasamanya diucapkan terima kasih.



**Warjadin Aliyanto, SKM, M.Kes**  
 NIP 196401281985021001

## Lampiran 6

KOMITE ETIK PENELITIAN KESEHATAN  
HEALTH RESEARCH ETHICS COMMITTEE  
POLTEKKES TANJUNGPINANG

**KETERANGAN LAYAK ETIK**  
DESCRIPTION OF ETHICAL EXEMPTION  
"ETHICAL EXEMPTION"  
No.148/KEPK-TJK/X/2022

Protokol penelitian yang diusulkan oleh :  
*The research protocol proposed by*

Peneliti utama : Fitriani Lestari  
*Principal In Investigator*

Nama Institusi : Jurusan Kesehatan Lingkungan Poltekkes Tanjungpinang  
*Name of the Institution*

Dengan judul:  
*Title*

**"Pemanfaatan Pati dan Selulosa Dari Limbah Bonggol Pisang (Musa Paradisiaca L)  
Sebagai Bahan Baku Bioplastik"**

Dinyatakan layak etik sesuai 7 (tujuh) Standar WHO 2011, yaitu 1) Nilai Sosial, 2) Nilai Ilmiah, 3) Pemerataan Beban dan Manfaat, 4) Risiko, 5) Bujukan/Eksploitasi, 6) Kerahasiaan dan Privacy, dan 7) Persetujuan Setelah Penjelasan, yang merujuk pada Pedoman CIOMS 2016. Hal ini seperti yang ditunjukkan oleh terpenuhinya indikator setiap standar.

*Declared to be ethically appropriate in accordance to 7 (seven) WHO 2011 Standards, 1) Social Values, 2) Scientific Values, 3) Equitable Assessment and Benefits, 4) Risks, 5) Persuasion/Exploitation, 6) Confidentiality and Privacy, and 7) Informed Consent, referring to the 2016 CIOMS Guidelines. This is as indicated by the fulfillment of the indicators of each standard.*

Pernyataan Etik ini berlaku selama kurun waktu tanggal 24 Mei 2022 sampai dengan tanggal 24 Mei 2023.

*This declaration of ethics applies during the period May 24, 2022 until May 24, 2023*

May 24, 2022  
Professor and Chairperson



Dr. Aprina, S.Kp., M.Kes