

## LAMPIRAN A.

### PERHITUNGAN PROSENTASE HASIL SINTESIS

Reaksi:

Piroksikam + 3,4-diklorobenzoil klorida → Senyawa hasil sintesis

|               |           |           |
|---------------|-----------|-----------|
| M : 0,010 mol | 0,015 mol | -         |
| B : 0,010 mol | 0,010 mol | 0,010 mol |
| S : -         | 0,005 mol | 0,010 mol |

BM Senyawa Hasil Sintesis = 119,57

Berat teoritis Senyawa Hasil Sintesis =  $0,010 \text{ mol} \times 119,57$   
= 1,1957 gram

Hasil yang didapat = 1,0052 gram

Jadi, prosentase hasil =  $\frac{\text{Berat senyawa hasil sintesis}}{\text{Berat senyawa secara teoritis}} \times 100\%$   
=  $\frac{1,0052}{1,1957} \times 100\%$   
= 84,07 %

**LAMPIRAN B.**  
**PERHITUNGAN BERAT**



1. Piroksikam                      = mol x BM  
                                             = 0,010 mol x 331,35  
                                             = 3,3135 gram

2. Senyawa Uji                    = mol x BM  
                                             = 0,015 x 209,5  
                                             = 3,1425 gram

3. Piridin                            = mol x BM  
                                             = 0,03 mol x 79,10  
                                             = 2,373 gram  
                                             = gram : BJ  
                                             = 2,373 : 1,435  
                                             = 1,65 ml  $\approx$  2,0 ml

## LAMPIRAN C.

### PERHITUNGAN % HAMBATAN NYERI SENYAWA HASIL SINTESIS DAN SENYAWA PEMBANDING PIROKSIKAM

| Piroksikam                                        | Senyawa Hasil Sintesis                            |
|---------------------------------------------------|---------------------------------------------------|
| Dosis 1 mg/kg BB                                  | Dosis 1 mg/kg BB                                  |
| % hambatan nyeri =                                | % hambatan nyeri =                                |
| $\frac{90.6 - 71.2}{90.6} \times 100\% = 21.42\%$ | $\frac{90.6 - 70}{90.6} \times 100\% = 22.74\%$   |
| Dosis 2 mg/kg BB                                  | Dosis 2 mg/kg BB                                  |
| % hambatan nyeri =                                | % hambatan nyeri =                                |
| $\frac{90.6 - 58}{90.6} \times 100\% = 35.98\%$   | $\frac{90.6 - 55}{90.6} \times 100\% = 39.29\%$   |
| Dosis 3 mg/kg BB                                  | Dosis 3 mg/kg BB                                  |
| % hambatan nyeri =                                | % hambatan nyeri =                                |
| $\frac{90.6 - 49}{90.6} \times 100\% = 45.92\%$   | $\frac{90.6 - 48}{90.6} \times 100\% = 47.02\%$   |
| Dosis 4 mg/kg BB                                  | Dosis 4 mg/kg BB                                  |
| % hambatan nyeri =                                | % hambatan nyeri =                                |
| $\frac{90.6 - 40.6}{90.6} \times 100\% = 55.19\%$ | $\frac{90.6 - 38.4}{90.6} \times 100\% = 57.62\%$ |
| Dosis 5 mg/kg BB                                  | Dosis 5 mg/kg BB                                  |
| % hambatan nyeri =                                | % hambatan nyeri =                                |
| $\frac{90.6 - 28}{90.6} \times 100\% = 69.09\%$   | $\frac{90.6 - 28.6}{90.6} \times 100\% = 68.43\%$ |

**LAMPIRAN D.**

**HASIL UJI HSD ANTARA KELOMPOK SENYAWA UJI,  
SENYAWA PEMBANDING PIROKSIKAM, DAN KONTROL CMC-  
NA 0,5%**

**Multiple Comparisons**

Dependent Variable: GELIAT

Tukey HSD

|         |         | Mean<br>Differenc<br>e (I-J) | Std.<br>Error | Sig. | 95% Confidence Interval |                |
|---------|---------|------------------------------|---------------|------|-------------------------|----------------|
|         |         |                              |               |      | Upper<br>Bound          | Lower<br>Bound |
| kontrol | do 1    | 20.600(*)                    | 3.727         | .000 | 7.96                    | 33.24          |
|         | do 2    | 35.600(*)                    | 3.727         | .000 | 22.96                   | 48.24          |
|         | do 3    | 42.600(*)                    | 3.727         | .000 | 29.96                   | 55.24          |
|         | do 4    | 52.200(*)                    | 3.727         | .000 | 39.56                   | 64.84          |
|         | do 5    | 62.000(*)                    | 3.727         | .000 | 49.36                   | 74.64          |
|         | p 1     | 19.400(*)                    | 3.727         | .000 | 6.76                    | 32.04          |
|         | p 2     | 32.600(*)                    | 3.727         | .000 | 19.96                   | 45.24          |
|         | p 3     | 41.600(*)                    | 3.727         | .000 | 28.96                   | 54.24          |
|         | p 4     | 50.000(*)                    | 3.727         | .000 | 37.36                   | 62.64          |
|         | p 5     | 62.600(*)                    | 3.727         | .000 | 49.96                   | 75.24          |
| do 1    | kontrol | -<br>20.600(*)               | 3.727         | .000 | -33.24                  | -7.96          |
|         | do 2    | 15.000(*)                    | 3.727         | .009 | 2.36                    | 27.64          |
|         | do 3    | 22.000(*)                    | 3.727         | .000 | 9.36                    | 34.64          |

|      |         |           |       |       |        |        |
|------|---------|-----------|-------|-------|--------|--------|
|      | do 4    | 31.600(*) | 3.727 | .000  | 18.96  | 44.24  |
|      | do 5    | 41.400(*) | 3.727 | .000  | 28.76  | 54.04  |
|      | p 1     | -1.200    | 3.727 | 1.000 | -13.84 | 11.44  |
|      | p 2     | 12.000    | 3.727 | .076  | -.64   | 24.64  |
|      | p 3     | 21.000(*) | 3.727 | .000  | 8.36   | 33.64  |
|      | p 4     | 29.400(*) | 3.727 | .000  | 16.76  | 42.04  |
|      | p 5     | 42.000(*) | 3.727 | .000  | 29.36  | 54.64  |
| do 2 | kontrol | -         | 3.727 | .000  | -48.24 | -22.96 |
|      |         | 35.600(*) |       |       |        |        |
|      | do 1    | -         | 3.727 | .009  | -27.64 | -2.36  |
|      |         | 15.000(*) |       |       |        |        |
|      | do 3    | 7.000     | 3.727 | .727  | -5.64  | 19.64  |
|      | do 4    | 16.600(*) | 3.727 | .003  | 3.96   | 29.24  |
|      | do 5    | 26.400(*) | 3.727 | .000  | 13.76  | 39.04  |
|      | p 1     | -         | 3.727 | .003  | -28.84 | -3.56  |
|      |         | 16.200(*) |       |       |        |        |
|      | p 2     | -3.000    | 3.727 | .999  | -15.64 | 9.64   |
|      | p 3     | 6.000     | 3.727 | .870  | -6.64  | 18.64  |
|      | p 4     | 14.400(*) | 3.727 | .014  | 1.76   | 27.04  |
|      | p 5     | 27.000(*) | 3.727 | .000  | 14.36  | 39.64  |
| do 3 | kontrol | -         | 3.727 | .000  | -55.24 | -29.96 |
|      |         | 42.600(*) |       |       |        |        |
|      | do 1    | -         | 3.727 | .000  | -34.64 | -9.36  |
|      |         | 22.000(*) |       |       |        |        |
|      | do 2    | -7.000    | 3.727 | .727  | -19.64 | 5.64   |
|      | do 4    | 9.600     | 3.727 | .292  | -3.04  | 22.24  |
|      | do 5    | 19.400(*) | 3.727 | .000  | 6.76   | 32.04  |
|      | p 1     | -         | 3.727 | .000  | -35.84 | -10.56 |
|      |         | 23.200(*) |       |       |        |        |
|      | p 2     | -10.000   | 3.727 | .240  | -22.64 | 2.64   |

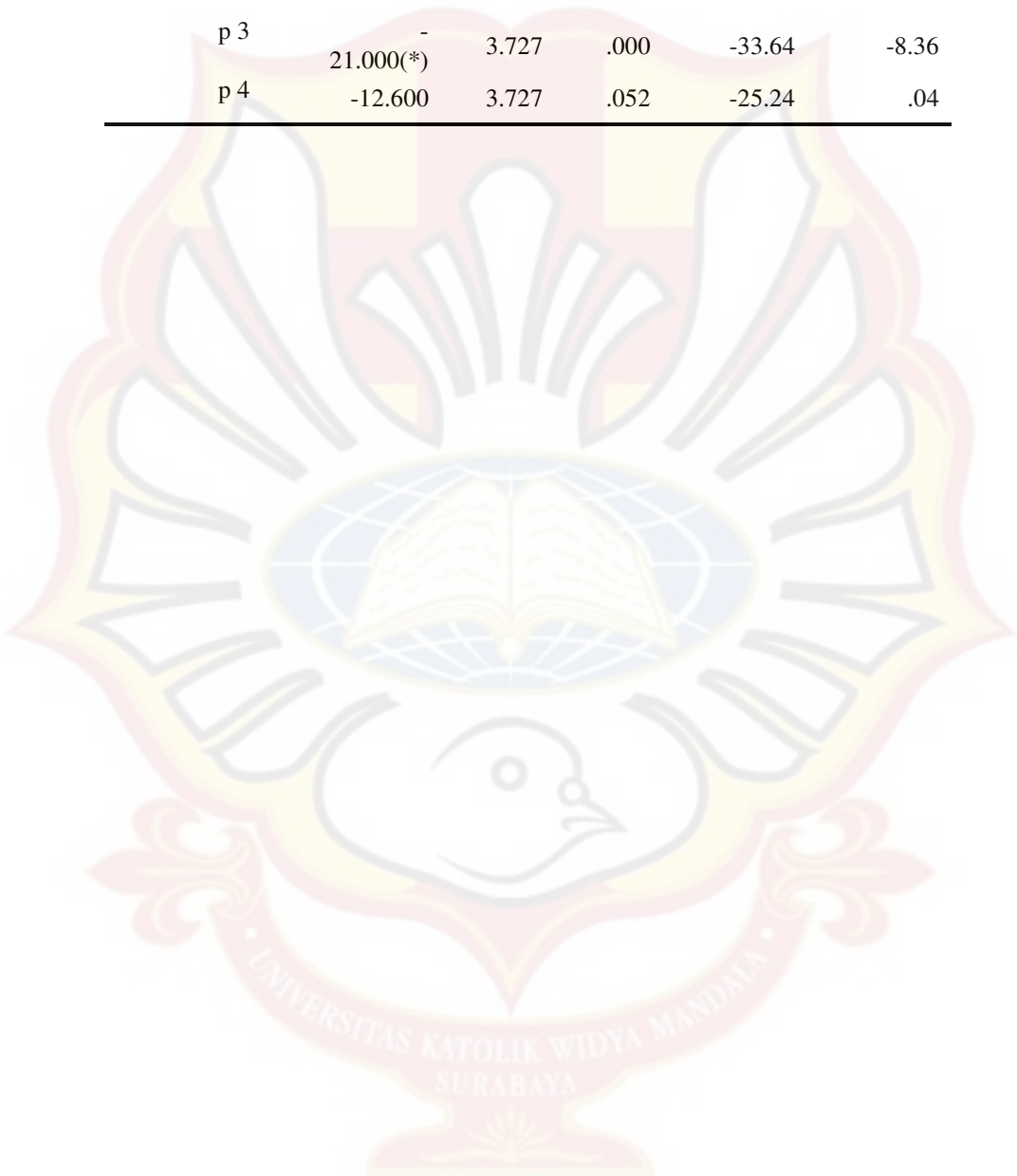
|      |         |           |       |       |        |        |
|------|---------|-----------|-------|-------|--------|--------|
|      | p 3     | -1.000    | 3.727 | 1.000 | -13.64 | 11.64  |
|      | p 4     | 7.400     | 3.727 | .659  | -5.24  | 20.04  |
|      | p 5     | 20.000(*) | 3.727 | .000  | 7.36   | 32.64  |
| do 4 | kontrol | -         | 3.727 | .000  | -64.84 | -39.56 |
|      |         | 52.200(*) |       |       |        |        |
|      | do 1    | -         | 3.727 | .000  | -44.24 | -18.96 |
|      |         | 31.600(*) |       |       |        |        |
|      | do 2    | -         | 3.727 | .003  | -29.24 | -3.96  |
|      |         | 16.600(*) |       |       |        |        |
|      | do 3    | -9.600    | 3.727 | .292  | -22.24 | 3.04   |
|      | do 5    | 9.800     | 3.727 | .265  | -2.84  | 22.44  |
|      | p 1     | -         | 3.727 | .000  | -45.44 | -20.16 |
|      |         | 32.800(*) |       |       |        |        |
|      | p 2     | -         | 3.727 | .000  | -32.24 | -6.96  |
|      |         | 19.600(*) |       |       |        |        |
|      | p 3     | -10.600   | 3.727 | .175  | -23.24 | 2.04   |
|      | p 4     | -2.200    | 3.727 | 1.000 | -14.84 | 10.44  |
|      | p 5     | 10.400    | 3.727 | .195  | -2.24  | 23.04  |
| do 5 | kontrol | -         | 3.727 | .000  | -74.64 | -49.36 |
|      |         | 62.000(*) |       |       |        |        |
|      | do 1    | -         | 3.727 | .000  | -54.04 | -28.76 |
|      |         | 41.400(*) |       |       |        |        |
|      | do 2    | -         | 3.727 | .000  | -39.04 | -13.76 |
|      |         | 26.400(*) |       |       |        |        |
|      | do 3    | -         | 3.727 | .000  | -32.04 | -6.76  |
|      |         | 19.400(*) |       |       |        |        |
|      | do 4    | -9.800    | 3.727 | .265  | -22.44 | 2.84   |
|      | p 1     | -         | 3.727 | .000  | -55.24 | -29.96 |
|      |         | 42.600(*) |       |       |        |        |
|      | p 2     | -         | 3.727 | .000  | -42.04 | -16.76 |
|      |         | 29.400(*) |       |       |        |        |
|      | p 3     | -         | 3.727 | .000  | -33.04 | -7.76  |
|      |         | 20.400(*) |       |       |        |        |
|      | p 4     | -12.000   | 3.727 | .076  | -24.64 | .64    |
|      | p 5     | .600      | 3.727 | 1.000 | -12.04 | 13.24  |

|     |         |           |       |       |        |        |
|-----|---------|-----------|-------|-------|--------|--------|
| p 1 | kontrol | -         | 3.727 | .000  | -32.04 | -6.76  |
|     |         | 19.400(*) |       |       |        |        |
|     | do 1    | 1.200     | 3.727 | 1.000 | -11.44 | 13.84  |
|     | do 2    | 16.200(*) | 3.727 | .003  | 3.56   | 28.84  |
|     | do 3    | 23.200(*) | 3.727 | .000  | 10.56  | 35.84  |
|     | do 4    | 32.800(*) | 3.727 | .000  | 20.16  | 45.44  |
|     | do 5    | 42.600(*) | 3.727 | .000  | 29.96  | 55.24  |
|     | p 2     | 13.200(*) | 3.727 | .034  | .56    | 25.84  |
|     | p 3     | 22.200(*) | 3.727 | .000  | 9.56   | 34.84  |
|     | p 4     | 30.600(*) | 3.727 | .000  | 17.96  | 43.24  |
|     | p 5     | 43.200(*) | 3.727 | .000  | 30.56  | 55.84  |
| p 2 | kontrol | -         | 3.727 | .000  | -45.24 | -19.96 |
|     |         | 32.600(*) |       |       |        |        |
|     | do 1    | -12.000   | 3.727 | .076  | -24.64 | .64    |
|     | do 2    | 3.000     | 3.727 | .999  | -9.64  | 15.64  |
|     | do 3    | 10.000    | 3.727 | .240  | -2.64  | 22.64  |
|     | do 4    | 19.600(*) | 3.727 | .000  | 6.96   | 32.24  |
|     | do 5    | 29.400(*) | 3.727 | .000  | 16.76  | 42.04  |
|     | p 1     | -         | 3.727 | .034  | -25.84 | -.56   |
|     |         | 13.200(*) |       |       |        |        |
|     | p 3     | 9.000     | 3.727 | .381  | -3.64  | 21.64  |
|     | p 4     | 17.400(*) | 3.727 | .001  | 4.76   | 30.04  |
|     | p 5     | 30.000(*) | 3.727 | .000  | 17.36  | 42.64  |
| p 3 | kontrol | -         | 3.727 | .000  | -54.24 | -28.96 |
|     |         | 41.600(*) |       |       |        |        |
|     | do 1    | -         | 3.727 | .000  | -33.64 | -8.36  |
|     |         | 21.000(*) |       |       |        |        |
|     | do 2    | -6.000    | 3.727 | .870  | -18.64 | 6.64   |
|     | do 3    | 1.000     | 3.727 | 1.000 | -11.64 | 13.64  |
|     | do 4    | 10.600    | 3.727 | .175  | -2.04  | 23.24  |

|       |         |           |       |       |        |        |
|-------|---------|-----------|-------|-------|--------|--------|
|       | do 5    | 20.400(*) | 3.727 | .000  | 7.76   | 33.04  |
|       | p 1     | -         | 3.727 | .000  | -34.84 | -9.56  |
|       |         | 22.200(*) |       |       |        |        |
|       | p 2     | -9.000    | 3.727 | .381  | -21.64 | 3.64   |
|       | p 4     | 8.400     | 3.727 | .481  | -4.24  | 21.04  |
|       | p 5     | 21.000(*) | 3.727 | .000  | 8.36   | 33.64  |
| <hr/> |         |           |       |       |        |        |
| p 4   | kontrol | -         | 3.727 | .000  | -62.64 | -37.36 |
|       |         | 50.000(*) |       |       |        |        |
|       | do 1    | -         | 3.727 | .000  | -42.04 | -16.76 |
|       |         | 29.400(*) |       |       |        |        |
|       | do 2    | -         | 3.727 | .014  | -27.04 | -1.76  |
|       |         | 14.400(*) |       |       |        |        |
|       | do 3    | -7.400    | 3.727 | .659  | -20.04 | 5.24   |
|       | do 4    | 2.200     | 3.727 | 1.000 | -10.44 | 14.84  |
|       | do 5    | 12.000    | 3.727 | .076  | -.64   | 24.64  |
|       | p 1     | -         | 3.727 | .000  | -43.24 | -17.96 |
|       |         | 30.600(*) |       |       |        |        |
|       | p 2     | -         | 3.727 | .001  | -30.04 | -4.76  |
|       |         | 17.400(*) |       |       |        |        |
|       | p 3     | -8.400    | 3.727 | .481  | -21.04 | 4.24   |
|       | p 5     | 12.600    | 3.727 | .052  | -.04   | 25.24  |
| <hr/> |         |           |       |       |        |        |
| p 5   | kontrol | -         | 3.727 | .000  | -75.24 | -49.96 |
|       |         | 62.600(*) |       |       |        |        |
|       | do 1    | -         | 3.727 | .000  | -54.64 | -29.36 |
|       |         | 42.000(*) |       |       |        |        |
|       | do 2    | -         | 3.727 | .000  | -39.64 | -14.36 |
|       |         | 27.000(*) |       |       |        |        |
|       | do 3    | -         | 3.727 | .000  | -32.64 | -7.36  |
|       |         | 20.000(*) |       |       |        |        |
|       | do 4    | -10.400   | 3.727 | .195  | -23.04 | 2.24   |
|       | do 5    | -.600     | 3.727 | 1.000 | -13.24 | 12.04  |
|       | p 1     | -         | 3.727 | .000  | -55.84 | -30.56 |
|       |         | 43.200(*) |       |       |        |        |
|       | p 2     | -         | 3.727 | .000  | -42.64 | -17.36 |

|     |           |       |      |        |       |
|-----|-----------|-------|------|--------|-------|
|     | 30.000(*) |       |      |        |       |
| p 3 | -         | 3.727 | .000 | -33.64 | -8.36 |
|     | 21.000(*) |       |      |        |       |
| p 4 | -12.600   | 3.727 | .052 | -25.24 | .04   |

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**LAMPIRAN E.**  
**SERTIFIKAT PIROKSIKAM**

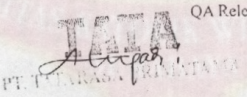
| 南通精华制药股份有限公司检验报告                                 |             |                  |          |
|--------------------------------------------------|-------------|------------------|----------|
| NANTONG JINGHUA PHARMACEUTICAL CO. LTD.          |             |                  |          |
| CERTIFICATE OF ANALYSIS                          |             |                  |          |
| APIs ADD: 43 Yuogang Road, Nantong Jiangsu China |             |                  |          |
| Tel: 86-513-85609405/85609406                    |             |                  |          |
| 吡 罗 昔 康                                          |             |                  |          |
| PIROXICAM                                        |             | MICRONIZED       |          |
| Batch No.                                        | PRX2009005M | Manufacture Date | 2009.3.4 |
| Total Quantity                                   | 200.0KG     | Report Date      | 2009.3.5 |
| Commercial Quantity                              | 200.0KG     | Re-test Date     | 2012.3.3 |
| Inspection No.                                   | 09030020    |                  |          |

| TEST                        | SPECIFICATIONS<br>(USP)                                | RESULTS  |
|-----------------------------|--------------------------------------------------------|----------|
| Characteristics             | off-white to light tan or light yellow odorless powder | Complies |
| Identification              | A. IR B. UV C. TLC                                     | Complies |
| Water                       | ≤0.5%                                                  | 0.32%    |
| Residue on ignition         | ≤0.3%                                                  | 0.14%    |
| Heavy metals                | ≤0.005%                                                | <0.005%  |
| Organic volatile impurities | complies                                               | Complies |
| Residual solvents           | Ethanol ≤0.5%                                          | <0.5%    |
| Particle size               | 100% ≤ 1000 mesh                                       | Complies |
| Assay                       | 97.0~103.0%                                            | 99.46%   |

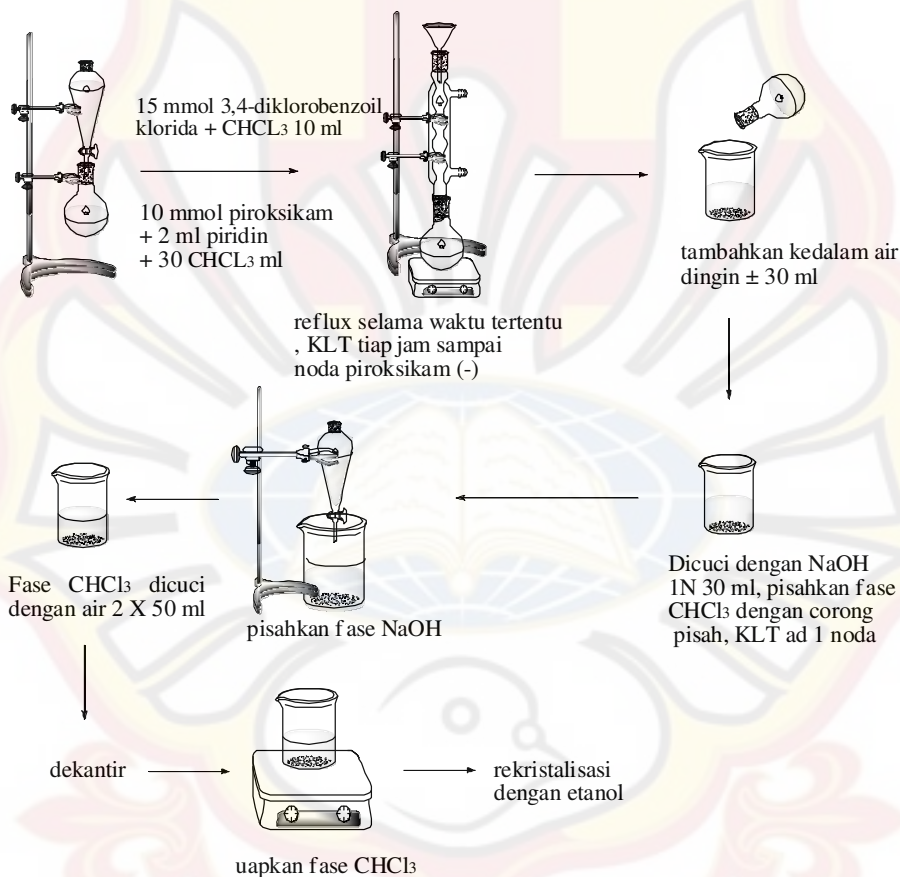
  

|                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Conclusion                                                                                      |                                                                                                 | The product meets the requirements of USP 31 and the additional items defined by customer       |                                                                                                 |
| Analyst                                                                                         | Supervisor                                                                                      | Chief of Laboratory                                                                             | QA Release Date                                                                                 |
| <br>2009.3.5 | <br>2009.3.5 | <br>2009.3.5 | <br>2009.3.5 |

  
PT. T. J. PHARMACEUTICAL

## LAMPIRAN F.

### SKEMA SINTESIS SENYAWA



**LAMPIRAN G.**  
**SERTIFIKAT MENCIT (MUS MUSCULUS)**

**CV. SURABAYA MOUSE SERVICE  
WEDORO MASJID NO. 20-E RT. 01 RW.05 WEDORO  
KECAMATAN WARU SIDOARJO  
TELP. 081938310682 – 03170259110**

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Yang bertanda tangan di bawah ini:

Nama : M. Syamsul Bahri, S.Kom

Selaku penanggung jawab Pengembangan Hewan Percobaan

Menerangkan bahwa yang digunakan pada penelitian:

Judul : Sintesis O-(3,4-diklorobenzoil) piroksikam dan Uji Aktivitas  
Analgesik terhadap Mencit (Mus Musculus).

Peneliti : Elisabeth Stefania Watun

Institusi : Fakultas Farmasi Universitas Katolik Widya Mandala  
Surabaya

NRP : 2443006110

Merupakan hewan uji dengan spesifikasi:

Mencit galur : Swiss Webster

Umur : 2 – 3 bulan

Jenis kelamin : Jantan

Jumlah : 55 ekor

Demikian surat keterangan ini dibuat untuk dapat digunakan sebaik-baiknya.

Sidoarjo, 20 Agustus 2010



(M. Syamsul Bahri, S.Kom)