

BAB V

PENUTUP

A. Kesimpulan

1. Variasi konsentrasi CMC-Na dan PVP K-30 dalam formulasi bukal *patch* salbutamol sulfat tidak berpengaruh terhadap keseragaman bobot, *folding endurance*, *surface* pH dan keseragaman kandungan. Tetapi berpengaruh terhadap persentase *swelling index* dimana peningkatan konsentrasi PVP K-30 sampai 20% dapat meningkatkan persentase *swelling index* tetapi mengalami penurunan pada konsentrasi PVP K-30 sebesar 30%.
2. Peningkatan konsentrasi PVP K-30 sampai 20% dapat memperbaiki dan meningkatkan pelepasan Salbutamol Sulfat dari *patch* tetapi mengalami penurunan pada konsentrasi PVP K-30 sebesar 30%. Pelepasan obat mengikuti kinetika orde nol dengan mekanisme pelepasan dikontrol oleh difusi melalui matriks dengan mengikuti mekanisme difusi Fick.

B. Saran

1. Perlu dilakukan uji *in vivo* sehingga dapat diketahui bioavailabilitas sediaan bukal *patch* salbutamol sulfat dan dapat dibuat korelasi *in vivo* dan *in vitro*.
2. Perlu dilakukan penelitian lebih lanjut mengenai optimasi perbandingan penggunaan CMC-Na dan PVP K-30 untuk mendapatkan pelepasan obat yang baik.

DAFTAR PUSTAKA

- Anonim. 2000. *The United States Pharmacopeia and National Formulary*. Washington DC. 54-55
- Ajeet, Singh B, Juneja R. 2012. Recent Findings in Concern to Buccal Patches : a Review. *International Journal of Current Pharmaceutical Research* 4 (1) : 12-17.
- Anggraini D. 2011. Formulasi dan Uji *In vitro* Granul Mukoadhesif Salbutamol Sulfat Menggunakan Kombinasi Polimer carbopol 940P dan Hidroksipropil Selulosa [skripsi]. Padang : Universitas Andalas. Hlm 8-9.
- Arya RK, Chaurasia H, Bharadwaj P, Garud N, Palani S. 2011. Development and Evaluation of Mucoadhesive Buccal Tablets of Salbutamol Sulphate. *International Research Journal of Pharmacy* 2 (1) : 159-162.
- Astuti P, Yunus F, Antariksa B, Ratnawati. 2011. Prevalensi dan Gejala Klinis Obstructive Sleep Apnea (OSA) pada Pasien Asma. *Journal Indonesian Medical Association* 61 : 2.
- Bankar PH, Gaikwad PD, Pawar SP. 2011. Novel Sustained Release Drug Delivery System : Review. *International Journal of Pharmaceutical Research & Development* 3(12) : hlm 1-14.
- Chang HS, Robinson JR. 1987. Bioadhesive Polymers as Platforms for Oral Controlled Drug Delivery II Synthesis and Evaluation of some Swelling water Insoluble Bioadhesive Polymers. *Journal of Pharmaceutical Science*. 74:399-405.
- Departemen Kesehatan RI. 1979. *Farmakope Indonesia*. Ed ke-III. Jakarta. 285-286
- Departemen Kesehatan RI. 1995. *Farmakope Indonesia*. Ed ke-IV. Jakarta. 355-356
- Gandhi PA, Patel MR, Patel KR, Patel NM. 2011. A Review Article on Mucoadhesive Buccal Drug Delivery System. *International Journal of Pharmaceutical Research & Development* 3(5): 159 – 173.
- Gandjar IG, Rahman A. 2007. *Kimia Farmasi Analisis*. Pustaka pelajar. Jakarta.
- Ilavarasan P, Ezhumalai K, Rajalakshmi AN. 2011. Buccal Patches as Emerging Trend. *International Journal of Pharmacy & Technology* 3 : 973-986.

- Jyotsana M, Sagar B, Mahesh D. 2010. Mucosal Drug Delivery System. *International Journal of Research in Ayurveda & Pharmacy* 1 (1) : 63-70.
- Kaul M, Verma S, Rawat A, Saini S. 2011. An Overview on Buccal Drug Delivery System. *International Journal of Pharmaceutical Sciences and Research* 2(6) : 1303-1321.
- Khairnar GA, Sayyad FJ. 2010. Development of Buccal Drug Delivery System. *International Journal of PharmTech Research* 4(8) : 874-883.
- Khan KA. 1975. The Concept of Dissolution Efficiency. *Journal of Pharmaceutical Pharmacol* 27 (1) : 48-49.
- Lachman L, Lieberman HA, Kaning JL. 1994. Teori dan Praktek Farmasi Industri, diterjemahkan oleh Suyatmi. Jilid II. Universitas Indonesia Press.
- Leeson LJ, Carstensen JT. 1974. *Dissolution Technology*. Whitlock Press Inc. United states.
- Lordi NG. 1986. *Sustained Release Dosage Form in the Theory and Practice of Industrial Pharmacy*. Ed ke-3. Philadelphia : Lea & Febiger. Hlm 430-456.
- Majid FCN. 2009. Formulasi *Patch* Mukoadhesif Propranolol Hidroksida: Pengaruh Perbandingan Konsentrasi Natrium Karboksimetilselulosa dan Polivinil Piroolidon Terhadap Sifat Fisik *Patch* dan Pelepasan obat [skripsi]. Surakarta : Fakultas Farmasi Universitas Muhammadiyah Surakarta.
- Martindale. 2009. *Martindale – The Complete Drug Reference*. - 36th Edition ed. Pharmaceutical Press. Hlm 793.
- Modi SA, Gaikwad PD, Bankar VH, Pawar SP. 2011. Sustained Release Drug Delivery System : A Review. *International Journal of Pharma Research and Development* 2 (12) : 147-160.
- Mouzam T, Dehgan MHG, Asis S, Sahuji T, Chudiwal P. 2011. Development of a Novel Floating Ring Capsule-Type Dosage Form for Stomach Specific Delivery. *Saudi Pharmaceutical Journal*. 238-240.
- Panigrahi L, Pattnaik S, Ghosal SK. 2004. Design and Characterization of Mucoadhesive Buccal *Patches* of Salbtamol Sulfate. *Acta Poloniae Pharmaceutica-Drug Research* 61 (5) : 35-360.
- Patel AR, Patel DA, Chaudhry SV. 2011. Mucoadhesive Buccal Drug Delivery System. *International Journal of Pharmacy & Life Sciences* 2 (6) : 848-856 848.
- Patel K, Patel U, Bhimani B, Patel G, Daslaniya D. 2012. *Extended Release Oral Drug Delivery System*. IJPRBS vol 1 (3) : 1-26.

- Patel KV, Patel ND, Dodiya HD, Shelat PK. 2011. Buccal Bioadhesive Drug Delivery System: An Overview. *International Journal of Pharmaceutical and Biological Archives* 2(2) : 600-609.
- Patel RS, Poddar SS. 2009. Development and Characterization of Mucoadhesive Buccal Patches of Salbutamol Sulphate. *Current Drug Delivery* 6 : 140-144.
- Patel VM, Prajapati BG, Patel MM. 2007. Design and characterization of chitosan-containing mucoadhesive buccal patches of propranolol hydrochloride. *Acta Pharma* 57 : 61-72.
- Pathan AM, Channawar MA, Bakde BV, DR. Chandewar AV. 2011. Development And *In vitro* Evaluation of Salbutamol Sulphate Mucoadhesive Buccal Patches. *International Journal of Pharmacy and Pharmaceutical Sciences* 3 Suppl 2: 39-44.
- Priya S *et al.* 2011. Preparation and Evaluation of Buccal Mucoadhesive Patch of Betamethasone Sodium Phosphate for the Treatment of Oral Submucosa Fibrosis. *Journal of Chemical and Pharmaceutical research* 3 (6) : 56-65.
- Puratchikody A, Prasanth VV, Mathew ST, Kumar BA. 2011. Buccal Drug Delivery: Past, Present and Future – A Review. *International Journal of Drug Delivery* 3 : 171-184.
- Puratchikody A, Prasanth VV, Mathew ST, Kumar BA. 2011. Development and Characterization of Mucoadhesive Patches of Salbutamol Sulfate for Unidirectional Buccal Drug Delivery. *Acta Pharma* 61 : 157-170.
- Rowe RC, Sheskey PJ, Quinn ME, editor. 2009. *Handbook of Pharmaceutical Excipients*. Ed ke-6. USA : Pharmaceutical Press. Hlm 147-150 ; 291-295 ; 610-614.
- Roychowdhury S, Gupta R, Saha S. 2011. A Review on Buccal Mucoadhesive Drug Delivery Systems. *Indo-Global Journal of Pharmaceutical Sciences* 1 (3) : 223-233.
- Sadray S, Honary S, Ebrahimi P, Jafari P, Rezaee S. 2010. Dissolution Profile Comparison : Model Dependent and Model Independent Approaches. *International Journal of Pharmaceutical and Bio Sciences* 1 (2) : 1-8
- Satyabrata *et al.* 2010. Design and evaluation of methotrexate buccal mucoadhesive patches. *International Journal of Pharmaceutical Biomedic and Sciences* 1(2) : 31-36
- Shargel L, Wu-Pong S, Yu, A.B.C. 2005. *Applied Biopharmaceutics and Pharmacokinetics*. Ed ke-5. Appleton dan Lange, United States. Hlm 97-113, 132, 735.

- Shojaei AH, Chang RK, Guo X, Burnside BA, Couch RA. 2001. Systemic Drug Delivery via the Buccal Mucosal Route. *Pharmaceutical Technology*. Hlm 70-81.
- Singhvi G, Singh M. 2011. Review : In-Vitro Drug Release Characterization Models. *International Journal of Pharmaceutical Studies and Research II* Issue I : 77-84.
- Siregar, C.J.P. dan S. Wikarsa. 2010. *Teknologi Farmasi Sediaan Tablet Dasar-Dasar Praktis*. Kedokteran EGC. Jakarta. Hlm 159-160
- Suroyah E. 2012. Pengaruh Perbedaan Kadar Propilen Glikol sebagai Permeation Enhancer dalam Formulasi dan Evaluasi carvedilol Bukal Mukoadhesif *patch* [skripsi]. Jogjakarta : Fakultas Farmasi Universitas Gadjah Mada. Hlm 24-25.
- Tan HJ, Kirana R. 2002. *Obat-obat penting*. Jakarta : Elex Media Komputindo. Hlm 600-613.
- Venkatalakshmi R, Sudhakar Y, Chetty CM, Sasikala C, Varma MM. 2012. Buccal Drug Delivery Using Adhesive Polymeric *Patches*. *International Journal of Pharmaceutical Study and Research* 3(1) : 35-41.
- Walker R, Edwards C, editor. 2002. *Clinical Pharmacy and Therapeutics*. Ed ke-3. USA: Churchill Livingstone Elsevier. Hlm 375-379.

Lampiran 1. Data hasil keseragaman bobot.

| | Formula <i>patch</i> (mg) | | | | |
|-----------------|---------------------------|---------------------|--------------------|--------------------|--------------------|
| | Formula 1 (Kontrol) | Formula 2 (10:0) | Formula 3 (9:1) | Formula 4 (8:2) | Formula 5 (7:3) |
| | 109,0 | 121,5 | 116,2 | 110,1 | 102,7 |
| | 113,6 | 121,8 | 116,6 | 110,9 | 102,7 |
| | 119,2 | 125,1 | 116,8 | 111,2 | 104,6 |
| | 121,0 | 126,8 | 117,1 | 112,9 | 104,6 |
| | 121,8 | 126,9 | 117,1 | 113,1 | 105,3 |
| | 122,2 | 127,1 | 118,0 | 116,2 | 105,3 |
| | 123,6 | 127,7 | 118,2 | 117,3 | 105,6 |
| | 124,0 | 128,8 | 119,0 | 118,9 | 106,8 |
| | 124,4 | 129,4 | 119,7 | 119,7 | 107,0 |
| | 124,8 | 130,6 | 120,3 | 120,0 | 107,1 |
| | 124,8 | 130,8 | 120,8 | 120,4 | 107,3 |
| | 124,8 | 131,6 | 120,8 | 121,9 | 107,8 |
| | 125,2 | 132,7 | 121,2 | 122,2 | 107,8 |
| | 125,8 | 133,6 | 121,8 | 122,2 | 108,0 |
| | 126,8 | 134,7 | 123,3 | 123,5 | 108,1 |
| | 127,8 | 135,1 | 123,4 | 123,8 | 108,5 |
| | 128,4 | 136,7 | 123,8 | 123,8 | 108,7 |
| | 129,3 | 138,0 | 124,0 | 124,0 | 108,7 |
| | 130,6 | 139,5 | 124,3 | 124,1 | 109,0 |
| | 130,8 | 139,5 | 124,8 | 124,4 | 109,4 |
| Rata-rata | 123,9 | 130,895 | 120,36 | 119,03 | 106,75 |
| SD | 5,329 | 5,351 | 2,895 | 4,959 | 2,005 |
| CV (%) | 4,301 (%) | 4,088 (%) | 2,406 (%) | 4,166 (%) | 1,879 (%) |
| range 10% BB | 111,5055 | 117,8055 | 108,324 | 107,127 | 96,075 |
| range 10% BA | 136,2845 | 143,9845 | 132,396 | 130,933 | 117,425 |
| range 20% BB | 99,116 | 104,716 | 96,288 | 95,224 | 85,4 |
| range 20% BA | 148,674 | 157,074 | 144,432 | 142,836 | 128,1 |

Perhitungan :

$$CV (\%) = \frac{SD}{rata - rata} \times 100\%$$

$$CV (\%) = \frac{5,329}{123,9} \times 100\% = 4,301 \%$$

$$Penyimpangan 10 \% = \frac{10}{100} \times 123,9 = 12,3895 \text{ mg}$$

Range 10 % :

$$\text{Batas bawah} = 123,9 - 12,3895 = 111,5055 \text{ mg}$$

$$\text{Batas atas} = 123,9 + 12,3895 = 136,2845 \text{ mg}$$

$$\text{penyimpangan } 20 \% = \frac{20}{100} \times 123,9 = 24,779 \text{ mg}$$

Range 20 % :

$$\text{Batas bawah} = 123,9 - 24,779 = 99,116 \text{ mg}$$

$$\text{Batas atas} = 123,9 + 24,779 = 148,674 \text{ mg}$$

Lampiran 2. Data hasil *folding endurance*

| Formula <i>patch</i> | Formula 1 (kontrol) | Formula 2 (10:0) | Formula 3 (9:1) | Formula 4 (8:2) | Formula 5 (7:3) |
|-------------------------|------------------------|---------------------|--------------------|--------------------|--------------------|
| R 1 | >300 | >300 | >300 | >300 | >300 |
| R 2 | >300 | >300 | >300 | >300 | >300 |
| R 3 | >300 | >300 | >300 | >300 | >300 |

Lampiran 3. Data hasil *surface* pH

| Formula <i>patch</i> | Formula 1 (kontrol) | Formula 2 (10:0) | Formula 3 (9:1) | Formula 4 (8:2) | Formula 5 (7:3) |
|-------------------------|------------------------|---------------------|--------------------|--------------------|--------------------|
| R 1 | 6-7 | 6-7 | 6-7 | 6-7 | 6-7 |
| R 2 | 6-7 | 6-7 | 6-7 | 6-7 | 6-7 |
| R 3 | 6-7 | 6-7 | 6-7 | 6-7 | 6-7 |
| total | 6,5 | 6,5 | 6,5 | 6,5 | 6,5 |

Lampiran 4. Data hasil *swelling index*

1. Formula 1 (kontrol)

| WADAH KOSONG | WADAH+ PATCH | 0 MENIT | 60 MENIT | 120 MENIT | 180 MENIT |
|--------------|--------------|---------|----------|-----------|-----------|
| 13,5772 | 13,6939 | 0,1167 | 0,3182 | 0,3509 | 0,3821 |
| 13,8945 | 14,0074 | 0,1129 | 0,2753 | 0,2871 | 0,3714 |
| 15,3707 | 15,4837 | 0,113 | 0,2611 | 0,3002 | 0,3643 |

| | % swelling (60 menit) | % swelling (120 menit) | % swelling (180 menit) |
|-----------|-----------------------|------------------------|------------------------|
| | 172,665 | 200,686 | 227,421 |
| | 143,844 | 154,296 | 228,964 |
| | 131,062 | 165,664 | 222,389 |
| Rata rata | 149,190 | 173,548 | 226,258 |

2. Formula 2 (10:0)

| WADAH KOSONG | WADAH+ PATCH | 0 MENIT | 60 MENIT | 120 MENIT | 180 MENIT |
|--------------|--------------|---------|----------|-----------|-----------|
| 14,2577 | 14,3822 | 0,1245 | 0,2426 | 0,2648 | 0,3038 |
| 15,9012 | 16,0282 | 0,1270 | 0,2477 | 0,2622 | 0,2964 |
| 13,2481 | 13,3749 | 0,1268 | 0,2458 | 0,2724 | 0,2881 |

| | % swelling (60 menit) | % swelling (120 menit) | % swelling (180 menit) |
|-----------|-----------------------|------------------------|------------------------|
| | 94,859 | 112,691 | 144,016 |
| | 95,039 | 106,457 | 133,386 |
| | 93,849 | 114,826 | 127,208 |
| Rata-rata | 94,582 | 111,325 | 134,870 |

3. Formula 3 (9:1)

| WADAH KOSONG | WADAH+ PATCH | 0 MENIT | 60 MENIT | 120 MENIT | 180 MENIT |
|--------------|--------------|---------|----------|-----------|-----------|
| 16,5119 | 16,6342 | 0,1223 | 0,2941 | 0,326 | 0,3752 |
| 13,3761 | 13,5021 | 0,1260 | 0,3042 | 0,3372 | 0,3838 |
| 14,5219 | 14,6471 | 0,1252 | 0,29989 | 0,3362 | 0,3830 |

| | % swelling (60 menit) | % swelling (120 menit) | % swelling (180 menit) |
|-----------|-----------------------|------------------------|------------------------|
| | 140,474 | 166,558 | 206,787 |
| | 141,429 | 167,619 | 204,603 |
| | 139,529 | 168,530 | 205,911 |
| Rata-rata | 140,477 | 167,569 | 205,767 |

4. Formula 4 (8:2)

| WADAH KOSONG | WADAH+ PATCH | 0 MENIT | 60 MENIT | 120 MENIT | 180 MENIT |
|--------------|--------------|---------|----------|-----------|-----------|
| 13,7362 | 13,8450 | 0,1088 | 0,3668 | 0,4104 | 0,4581 |
| 14,4981 | 14,6028 | 0,1047 | 0,3124 | 0,3355 | 0,4087 |
| 13,7436 | 13,8502 | 0,1066 | 0,3791 | 0,4205 | 0,4813 |

| | % swelling (60 menit) | % swelling (120 menit) | % swelling (180 menit) |
|-----------|-----------------------|------------------------|------------------------|
| | 237,132 | 277,206 | 321,048 |
| | 198,376 | 220,439 | 290,353 |
| | 255,629 | 294,465 | 351,501 |
| Rata-rata | 230,379 | 264,037 | 320,967 |

5. Formula 5 (7:3)

| WADAH KOSONG | WADAH+ PATCH | 0 MENIT | 60 MENIT | 120 MENIT | 180 MENIT |
|--------------|--------------|---------|----------|-----------|-----------|
| 13,7841 | 13,9076 | 0,1235 | 0,3565 | 0,3972 | 0,4281 |
| 13,7450 | 13,8721 | 0,1271 | 0,3642 | 0,4326 | 0,4746 |
| 15,3857 | 15,5068 | 0,1211 | 0,2926 | 0,3470 | 0,4580 |

| | % swelling (60 menit) | % swelling (120 menit) | % swelling (180 menit) |
|-----------|--------------------------|---------------------------|---------------------------|
| | 188,664 | 221,619 | 246,640 |
| | 186,546 | 240,362 | 273,407 |
| | 141,618 | 186,540 | 278,200 |
| Rata-rata | 172,276 | 216,174 | 266,082 |

Perhitungan :

$$\% \text{ swelling index} = \frac{\text{berat akhir} - \text{berat awal}}{\text{berat awal}} \times 100 \%$$

$$\% \text{ swelling index 60 menit} = \frac{0,3182 - 0,1167}{0,1167} \times 100 \% = 172,665 \%$$

$$\% \text{ swelling index 120 menit} = \frac{0,3509 - 0,1167}{0,1167} \times 100 \% = 200,868 \%$$

$$\% \text{ swelling index 180 menit} = \frac{0,3821 - 0,1167}{0,1167} \times 100 \% = 227,421 \%$$

Lampiran 5. Data kurva baku

| konsentrasi (ppm) | absorbansi (y) | slope (b) | Intersep (a) |
|-------------------|----------------|-----------|--------------|
| 32 | 0,213 | 0,0067875 | -0,0022 |
| 40 | 0,272 | | |
| 48 | 0,322 | | |
| 56 | 0,381 | | |
| 64 | 0,43 | | |

Berdasarkan data diatas, dengan regresi linier diperoleh persamaan :

$$y = bx + a$$

$$y = 0,0067875x + -0,0022$$

$$r = 0,999520438$$

Lampiran 6. Data hasil keseragaman kadar

1. Formula 1 (kontrol)

| bobot patch | kadar tiap patch teoritis (mg) | absorbansi | X (ppm) | X (mg/ml) | % kadar | kadar (mg) |
|-------------|--------------------------------|------------|---------|-----------|---------|------------|
| 126,8 | 8,18724778 | 0,067 | 10,195 | 0,010 | 12,453 | 1,020 |
| 136,1 | 8,787732042 | 0,074 | 11,227 | 0,011 | 12,775 | 1,123 |
| 129,3 | 8,348668281 | 0,07 | 10,637 | 0,011 | 12,741 | 1,064 |
| Rata-rata | | | | | 12,656 | 1,069 |
| SD | | | | | | 0,052 |
| CV (%) | | | | | | 4,866 |

2. Formula 2 (10:0)

| bobot patch | kadar tiap patch teoritis (mg) | absorbansi | X (ppm) | X (mg/ml) | % kadar | kadar (mg) |
|-------------|--------------------------------|------------|---------|-----------|---------|------------|
| 138,1 | 8,440352955 | 0,524 | 77,525 | 0,078 | 91,850 | 7,752 |
| 122 | 7,45635815 | 0,536 | 79,293 | 0,079 | 106,343 | 7,929 |
| 129,3 | 7,902517285 | 0,514 | 76,052 | 0,076 | 96,237 | 7,605 |
| rata-rata | | | | | 98,143 | 7,762 |
| SD | | | | | | 0,162 |
| CV (%) | | | | | | 2,091 |

3. Formula 3 (9:1)

| bobot patch | kadar tiap patch teoritis (mg) | absorbansi | X (ppm) | X (mg/ml) | % kadar | kadar (mg) |
|-------------|--------------------------------|------------|---------|-----------|---------|------------|
| 112,6 | 7,484214025 | 0,518 | 76,641 | 0,077 | 102,403 | 7,664 |
| 113,7 | 7,557328016 | 0,546 | 80,766 | 0,081 | 106,871 | 8,077 |
| 119,4 | 7,936191426 | 0,553 | 81,797 | 0,082 | 103,069 | 8,180 |
| rata-rata | | | | | 104,115 | 7,973 |
| SD | | | | | | 0,273 |
| CV (%) | | | | | | 3,425 |

4. Formula 4 (8:2)

| bobot patch | kadar tiap patch teoritis (mg) | absorbansi | X (ppm) | X (mg/ml) | % kadar | kadar (mg) |
|-------------|--------------------------------|------------|---------|-----------|---------|------------|
| 113,6 | 7,635049987 | 0,536 | 79,293 | 0,079 | 103,854 | 7,929 |
| 112,1 | 7,534235067 | 0,518 | 76,641 | 0,077 | 101,724 | 7,664 |
| 114,9 | 7,722422919 | 0,567 | 83,860 | 0,084 | 108,593 | 8,386 |
| rata-rata | | | | | 104,723 | 7,993 |
| SD | | | | | | 0,365 |
| CV (%) | | | | | | 4,566 |

5. Formula 5 (7:3)

| bobot patch | kadar tiap patch teoritis (mg) | absorbansi | X (ppm) | X (mg/ml) | % kadar | kadar (mg) |
|-------------|--------------------------------|------------|---------|-----------|---------|------------|
| 106,6 | 7,988758782 | 0,535 | 79,145 | 0,079 | 99,071 | 7,915 |
| 112,5 | 8,430913349 | 0,567 | 83,860 | 0,084 | 99,467 | 8,386 |
| 112,2 | 8,408430913 | 0,541 | 80,029 | 0,080 | 95,178 | 8,003 |
| rata-rata | | | | | 97,905 | 8,101 |
| SD | | | | | | 0,250 |
| CV (%) | | | | | | 3,086 |

Perhitungan :

$$\text{kadar tiap patch teoritis (mg)} = \frac{\text{bobot patch}}{\text{bobot patch rata-rata}} \times \text{dosis teoritis}$$

$$\text{kadar tiap patch teoritis (mg)} = \frac{138,1}{130,895} \times 8 \text{ mg} = 8,44 \text{ mg}$$

$$y = bx + a$$

$$0,524 = 0,0067875x - 0,0022$$

$$x \text{ (ppm)} = \frac{0,524 + 0,0022}{0,0067875} = 77,525 \text{ ppm}$$

$$x \left(\frac{mg}{ml} \right) = \frac{77,525 \text{ ppm}}{1000} = 0,078 \text{ mg/ml}$$

$$\% \text{ kadar} = \frac{0,078 \times 4 \times 25}{8,44} \times 100 \% = 91,85 \%$$

$$\text{kadar (mg)} = \frac{91,85}{100} \times 8,44 \text{ mg} = 7,752 \text{ mg}$$

Lampiran 7. Data hasil disolusi

REPLIKASI 1

1. Formula 1 (kontrol)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,009 | 1 | 7,774 | 1,650 | 0,413 | 0,413 | 0,000 | 0,413 | 5,306 |
| 10 | 0,011 | 1 | 7,774 | 1,945 | 0,486 | 0,486 | 0,008 | 0,494 | 6,360 |
| 15 | 0,010 | 1 | 7,774 | 1,797 | 0,449 | 0,449 | 0,010 | 0,459 | 5,905 |
| 30 | 0,008 | 1 | 7,774 | 1,503 | 0,376 | 0,376 | 0,009 | 0,385 | 4,948 |
| 45 | 0,009 | 1 | 7,774 | 1,650 | 0,413 | 0,413 | 0,008 | 0,420 | 5,403 |
| 60 | 0,009 | 1 | 7,774 | 1,650 | 0,413 | 0,413 | 0,008 | 0,421 | 5,413 |
| 120 | 0,012 | 1 | 7,774 | 2,092 | 0,523 | 0,523 | 0,008 | 0,531 | 6,834 |
| 180 | 0,013 | 1 | 7,774 | 2,239 | 0,560 | 0,560 | 0,010 | 0,570 | 7,336 |
| 240 | 0,013 | 1 | 7,774 | 2,239 | 0,560 | 0,560 | 0,011 | 0,571 | 7,346 |
| 300 | 0,014 | 1 | 7,774 | 2,387 | 0,597 | 0,597 | 0,011 | 0,608 | 7,819 |
| 360 | 0,010 | 1 | 7,774 | 1,797 | 0,449 | 0,449 | 0,012 | 0,461 | 5,934 |
| 420 | 0,011 | 1 | 7,774 | 1,945 | 0,486 | 0,486 | 0,009 | 0,495 | 6,370 |
| 480 | 0,008 | 1 | 7,774 | 1,503 | 0,376 | 0,376 | 0,010 | 0,385 | 4,958 |

2. Formula 2 (10:0)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,106 | 1 | 7,009 | 15,941 | 3,985 | 3,985 | 0,000 | 3,985 | 56,858 |
| 10 | 0,106 | 1 | 7,009 | 15,941 | 3,985 | 3,985 | 0,080 | 4,065 | 57,995 |
| 15 | 0,107 | 1 | 7,009 | 16,088 | 4,022 | 4,022 | 0,080 | 4,102 | 58,520 |
| 30 | 0,132 | 1 | 7,009 | 19,772 | 4,943 | 4,943 | 0,080 | 5,023 | 71,668 |
| 45 | 0,146 | 1 | 7,009 | 21,834 | 5,459 | 5,459 | 0,099 | 5,557 | 79,288 |
| 60 | 0,161 | 1 | 7,009 | 24,044 | 6,011 | 6,011 | 0,109 | 6,120 | 87,317 |
| 120 | 0,171 | 1 | 7,009 | 25,517 | 6,379 | 6,379 | 0,120 | 6,500 | 92,730 |
| 180 | 0,154 | 1 | 7,009 | 23,013 | 5,753 | 5,753 | 0,128 | 5,881 | 83,901 |
| 240 | 0,152 | 1 | 7,009 | 22,718 | 5,680 | 5,680 | 0,115 | 5,795 | 82,672 |
| 300 | 0,15 | 1 | 7,009 | 22,424 | 5,606 | 5,606 | 0,114 | 5,719 | 81,600 |
| 360 | 0,15 | 1 | 7,009 | 22,424 | 5,606 | 5,606 | 0,112 | 5,718 | 81,579 |
| 420 | 0,15 | 1 | 7,009 | 22,424 | 5,606 | 5,606 | 0,112 | 5,718 | 81,579 |
| 480 | 0,15 | 1 | 7,009 | 22,424 | 5,606 | 5,606 | 0,112 | 5,718 | 81,579 |

3. Formula 3 (9:1)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,103 | 1 | 7,644 | 15,499 | 3,875 | 3,875 | 0,000 | 3,875 | 50,687 |
| 10 | 0,104 | 1 | 7,644 | 15,646 | 3,912 | 3,912 | 0,077 | 3,989 | 52,183 |
| 15 | 0,125 | 1 | 7,644 | 18,740 | 4,685 | 4,685 | 0,078 | 4,763 | 62,311 |
| 30 | 0,151 | 1 | 7,644 | 22,571 | 5,643 | 5,643 | 0,094 | 5,736 | 75,041 |
| 45 | 0,166 | 1 | 7,644 | 24,781 | 6,195 | 6,195 | 0,113 | 6,308 | 82,518 |
| 60 | 0,168 | 1 | 7,644 | 25,076 | 6,269 | 6,269 | 0,124 | 6,393 | 83,627 |
| 120 | 0,181 | 1 | 7,644 | 26,991 | 6,748 | 6,748 | 0,125 | 6,873 | 89,910 |
| 180 | 0,186 | 1 | 7,644 | 27,727 | 6,932 | 6,932 | 0,135 | 7,067 | 92,444 |
| 240 | 0,196 | 1 | 7,644 | 29,201 | 7,300 | 7,300 | 0,139 | 7,439 | 97,310 |
| 300 | 0,19 | 1 | 7,644 | 28,317 | 7,079 | 7,079 | 0,146 | 7,225 | 94,516 |
| 360 | 0,184 | 1 | 7,644 | 27,433 | 6,858 | 6,858 | 0,142 | 7,000 | 91,567 |
| 420 | 0,174 | 1 | 7,644 | 25,959 | 6,490 | 6,490 | 0,137 | 6,627 | 86,691 |
| 480 | 0,170 | 1 | 7,644 | 25,370 | 6,343 | 6,343 | 0,130 | 6,472 | 84,667 |

4. Formula 4 (8:2)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,021 | 1 | 7,8298 | 3,4180 | 0,8545 | 0,8545 | 0,0000 | 0,8545 | 10,9136 |
| 10 | 0,039 | 1 | 7,8298 | 6,0700 | 1,5175 | 1,5175 | 0,0171 | 1,5346 | 19,5992 |
| 15 | 0,064 | 1 | 7,8298 | 9,7532 | 2,4383 | 2,4383 | 0,0303 | 2,4687 | 31,5289 |
| 30 | 0,157 | 1 | 7,8298 | 23,4549 | 5,8637 | 5,8637 | 0,0488 | 5,9125 | 75,5124 |
| 45 | 0,189 | 1 | 7,8298 | 28,1694 | 7,0424 | 7,0424 | 0,1173 | 7,1596 | 91,4405 |
| 60 | 0,202 | 1 | 7,8298 | 30,0847 | 7,5212 | 7,5212 | 0,1408 | 7,6620 | 97,8570 |
| 120 | 0,208 | 1 | 7,8298 | 30,9687 | 7,7422 | 7,7422 | 0,1504 | 7,8926 | 100,8017 |
| 180 | 0,207 | 1 | 7,8298 | 30,8214 | 7,7053 | 7,7053 | 0,1548 | 7,8602 | 100,3878 |
| 240 | 0,206 | 1 | 7,8298 | 30,6740 | 7,6685 | 7,6685 | 0,1541 | 7,8226 | 99,9079 |
| 300 | 0,206 | 1 | 7,8298 | 30,6740 | 7,6685 | 7,6685 | 0,1534 | 7,8219 | 99,8985 |
| 360 | 0,206 | 1 | 7,8298 | 30,6740 | 7,6685 | 7,6685 | 0,1534 | 7,8219 | 99,8985 |
| 420 | 0,206 | 1 | 7,8298 | 30,6740 | 7,6685 | 7,6685 | 0,1534 | 7,8219 | 99,8985 |
| 480 | 0,206 | 1 | 7,8298 | 30,6740 | 7,6685 | 7,6685 | 0,1534 | 7,8219 | 99,8985 |

5. Formula 5 (7:3)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,082 | 1 | 8,249 | 12,405 | 3,101 | 3,101 | 0,000 | 3,101 | 37,596 |
| 10 | 0,089 | 1 | 8,249 | 13,436 | 3,359 | 3,359 | 0,062 | 3,421 | 41,474 |
| 15 | 0,109 | 1 | 8,249 | 16,383 | 4,096 | 4,096 | 0,067 | 4,163 | 50,466 |
| 30 | 0,146 | 1 | 8,249 | 21,834 | 5,459 | 5,459 | 0,082 | 5,540 | 67,166 |
| 45 | 0,166 | 1 | 8,249 | 24,781 | 6,195 | 6,195 | 0,109 | 6,304 | 76,426 |
| 60 | 0,174 | 1 | 8,249 | 25,959 | 6,490 | 6,490 | 0,124 | 6,614 | 80,177 |
| 120 | 0,184 | 1 | 8,249 | 27,433 | 6,858 | 6,858 | 0,130 | 6,988 | 84,713 |
| 180 | 0,188 | 1 | 8,249 | 28,022 | 7,006 | 7,006 | 0,137 | 7,143 | 86,589 |
| 240 | 0,189 | 1 | 8,249 | 28,169 | 7,042 | 7,042 | 0,140 | 7,182 | 87,071 |
| 300 | 0,19 | 1 | 8,249 | 28,317 | 7,079 | 7,079 | 0,141 | 7,220 | 87,526 |
| 360 | 0,189 | 1 | 8,249 | 28,169 | 7,042 | 7,042 | 0,142 | 7,184 | 87,089 |
| 420 | 0,195 | 1 | 8,249 | 29,053 | 7,263 | 7,263 | 0,141 | 7,404 | 89,759 |
| 480 | 0,201 | 1 | 8,249 | 29,937 | 7,484 | 7,484 | 0,145 | 7,630 | 92,492 |

REPLIKASI 2

1. Formula 1 (kontrol)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,01 | 1 | 8,077 | 1,797 | 0,449 | 0,449 | 0,000 | 0,449 | 5,563 |
| 10 | 0,004 | 1 | 8,077 | 0,913 | 0,228 | 0,228 | 0,009 | 0,237 | 2,938 |
| 15 | 0,009 | 1 | 8,077 | 1,650 | 0,413 | 0,413 | 0,005 | 0,417 | 5,164 |
| 30 | 0,011 | 1 | 8,077 | 1,945 | 0,486 | 0,486 | 0,008 | 0,494 | 6,121 |
| 45 | 0,01 | 1 | 8,077 | 1,797 | 0,449 | 0,449 | 0,010 | 0,459 | 5,683 |
| 60 | 0,010 | 1 | 8,077 | 1,797 | 0,449 | 0,449 | 0,009 | 0,458 | 5,674 |
| 120 | 0,011 | 1 | 8,077 | 1,945 | 0,486 | 0,486 | 0,009 | 0,495 | 6,130 |
| 180 | 0,007 | 1 | 8,077 | 1,355 | 0,339 | 0,339 | 0,010 | 0,349 | 4,315 |
| 240 | 0,004 | 1 | 8,077 | 0,913 | 0,228 | 0,228 | 0,007 | 0,235 | 2,911 |
| 300 | 0,006 | 1 | 8,077 | 1,208 | 0,302 | 0,302 | 0,005 | 0,307 | 3,796 |
| 360 | 0,005 | 1 | 8,077 | 1,061 | 0,265 | 0,265 | 0,006 | 0,271 | 3,358 |
| 420 | 0,013 | 1 | 8,077 | 2,239 | 0,560 | 0,560 | 0,005 | 0,565 | 6,997 |
| 480 | 0,009 | 1 | 8,077 | 1,650 | 0,413 | 0,413 | 0,011 | 0,424 | 5,246 |

2. Formula 2 (10:0)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,094 | 1 | 7,193 | 14,173 | 3,543 | 3,543 | 0,000 | 3,543 | 49,260 |
| 10 | 0,102 | 1 | 7,193 | 15,352 | 3,838 | 3,838 | 0,071 | 3,909 | 54,342 |
| 15 | 0,104 | 1 | 7,193 | 15,646 | 3,912 | 3,912 | 0,077 | 3,988 | 55,448 |
| 30 | 0,111 | 1 | 7,193 | 16,678 | 4,169 | 4,169 | 0,078 | 4,248 | 59,053 |
| 45 | 0,123 | 1 | 7,193 | 18,446 | 4,611 | 4,611 | 0,083 | 4,695 | 65,269 |
| 60 | 0,160 | 1 | 7,193 | 23,897 | 5,974 | 5,974 | 0,092 | 6,066 | 84,338 |
| 120 | 0,172 | 1 | 7,193 | 25,665 | 6,416 | 6,416 | 0,119 | 6,536 | 90,862 |
| 180 | 0,157 | 1 | 7,193 | 23,455 | 5,864 | 5,864 | 0,128 | 5,992 | 83,304 |
| 240 | 0,154 | 1 | 7,193 | 23,013 | 5,753 | 5,753 | 0,117 | 5,870 | 81,614 |
| 300 | 0,151 | 1 | 7,193 | 22,571 | 5,643 | 5,643 | 0,115 | 5,758 | 80,047 |
| 360 | 0,148 | 1 | 7,193 | 22,129 | 5,532 | 5,532 | 0,113 | 5,645 | 78,480 |
| 420 | 0,148 | 1 | 7,193 | 22,129 | 5,532 | 5,532 | 0,111 | 5,643 | 78,449 |
| 480 | 0,148 | 1 | 7,193 | 22,129 | 5,532 | 5,532 | 0,111 | 5,643 | 78,449 |

3. Formula 3 (9:1)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,105 | 1 | 7,810 | 15,794 | 3,948 | 3,948 | 0,000 | 3,948 | 50,556 |
| 10 | 0,107 | 1 | 7,810 | 16,088 | 4,022 | 4,022 | 0,079 | 4,101 | 52,510 |
| 15 | 0,118 | 1 | 7,810 | 17,709 | 4,427 | 4,427 | 0,080 | 4,508 | 57,717 |
| 30 | 0,149 | 1 | 7,810 | 22,276 | 5,569 | 5,569 | 0,089 | 5,658 | 72,440 |
| 45 | 0,171 | 1 | 7,810 | 25,517 | 6,379 | 6,379 | 0,111 | 6,491 | 83,108 |
| 60 | 0,186 | 1 | 7,810 | 27,727 | 6,932 | 6,932 | 0,128 | 7,059 | 90,389 |
| 120 | 0,190 | 1 | 7,810 | 28,317 | 7,079 | 7,079 | 0,139 | 7,218 | 92,417 |
| 180 | 0,192 | 1 | 7,810 | 28,611 | 7,153 | 7,153 | 0,142 | 7,294 | 93,398 |
| 240 | 0,196 | 1 | 7,810 | 29,201 | 7,300 | 7,300 | 0,143 | 7,443 | 95,303 |
| 300 | 0,185 | 1 | 7,810 | 27,580 | 6,895 | 6,895 | 0,146 | 7,041 | 90,154 |
| 360 | 0,187 | 1 | 7,810 | 27,875 | 6,969 | 6,969 | 0,138 | 7,107 | 90,993 |
| 420 | 0,176 | 1 | 7,810 | 26,254 | 6,564 | 6,564 | 0,139 | 6,703 | 85,824 |
| 480 | 0,171 | 1 | 7,810 | 25,517 | 6,379 | 6,379 | 0,131 | 6,511 | 83,362 |

4. Formula 4 (8:2)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,018 | 1 | 8,320 | 2,976 | 0,744 | 0,744 | 0,000 | 0,744 | 8,942 |
| 10 | 0,034 | 1 | 8,320 | 5,333 | 1,333 | 1,333 | 0,015 | 1,348 | 16,204 |
| 15 | 0,073 | 1 | 8,320 | 11,079 | 2,770 | 2,770 | 0,027 | 2,796 | 33,611 |
| 30 | 0,157 | 1 | 8,320 | 23,455 | 5,864 | 5,864 | 0,055 | 5,919 | 71,143 |
| 45 | 0,183 | 1 | 8,320 | 27,285 | 6,821 | 6,821 | 0,117 | 6,939 | 83,397 |
| 60 | 0,206 | 1 | 8,320 | 30,674 | 7,669 | 7,669 | 0,136 | 7,805 | 93,809 |
| 120 | 0,204 | 1 | 8,320 | 30,379 | 7,595 | 7,595 | 0,153 | 7,748 | 93,127 |
| 180 | 0,209 | 1 | 8,320 | 31,116 | 7,779 | 7,779 | 0,152 | 7,931 | 95,323 |
| 240 | 0,208 | 1 | 8,320 | 30,969 | 7,742 | 7,742 | 0,156 | 7,898 | 94,925 |
| 300 | 0,208 | 1 | 8,320 | 30,969 | 7,742 | 7,742 | 0,155 | 7,897 | 94,916 |
| 360 | 0,207 | 1 | 8,320 | 30,821 | 7,705 | 7,705 | 0,155 | 7,860 | 94,473 |
| 420 | 0,207 | 1 | 8,320 | 30,821 | 7,705 | 7,705 | 0,154 | 7,859 | 94,464 |
| 480 | 0,206 | 1 | 8,320 | 30,674 | 7,669 | 7,669 | 0,154 | 7,823 | 94,022 |

5. Formula 5 (7:3)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,079 | 1 | 7,961 | 11,963 | 2,991 | 2,991 | 0,000 | 2,991 | 37,570 |
| 10 | 0,084 | 1 | 7,961 | 12,700 | 3,175 | 3,175 | 0,060 | 3,235 | 40,635 |
| 15 | 0,125 | 1 | 7,961 | 18,740 | 4,685 | 4,685 | 0,063 | 4,749 | 59,651 |
| 30 | 0,137 | 1 | 7,961 | 20,508 | 5,127 | 5,127 | 0,094 | 5,221 | 65,583 |
| 45 | 0,168 | 1 | 7,961 | 25,076 | 6,269 | 6,269 | 0,103 | 6,371 | 80,037 |
| 60 | 0,181 | 1 | 7,961 | 26,991 | 6,748 | 6,748 | 0,125 | 6,873 | 86,339 |
| 120 | 0,188 | 1 | 7,961 | 28,022 | 7,006 | 7,006 | 0,135 | 7,140 | 89,698 |
| 180 | 0,19 | 1 | 7,961 | 28,317 | 7,079 | 7,079 | 0,140 | 7,219 | 90,688 |
| 240 | 0,190 | 1 | 7,961 | 28,317 | 7,079 | 7,079 | 0,142 | 7,221 | 90,706 |
| 300 | 0,189 | 1 | 7,961 | 28,169 | 7,042 | 7,042 | 0,142 | 7,184 | 90,244 |
| 360 | 0,190 | 1 | 7,961 | 28,317 | 7,079 | 7,079 | 0,141 | 7,220 | 90,697 |
| 420 | 0,199 | 1 | 7,961 | 29,643 | 7,411 | 7,411 | 0,142 | 7,552 | 94,870 |
| 480 | 0,197 | 1 | 7,961 | 29,348 | 7,337 | 7,337 | 0,148 | 7,485 | 94,028 |

REPLIKASI 3

1. Formula 1 (kontrol)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,007 | 1 | 7,722 | 1,355 | 0,339 | 0,339 | 0,000 | 0,339 | 4,388 |
| 10 | 0,012 | 1 | 7,722 | 2,092 | 0,523 | 0,523 | 0,007 | 0,530 | 6,861 |
| 15 | 0,008 | 1 | 7,722 | 1,503 | 0,376 | 0,376 | 0,010 | 0,386 | 5,000 |
| 30 | 0,008 | 1 | 7,722 | 1,503 | 0,376 | 0,376 | 0,008 | 0,383 | 4,962 |
| 45 | 0,008 | 1 | 7,722 | 1,503 | 0,376 | 0,376 | 0,008 | 0,383 | 4,962 |
| 60 | 0,008 | 1 | 7,722 | 1,503 | 0,376 | 0,376 | 0,008 | 0,383 | 4,962 |
| 120 | 0,004 | 1 | 7,722 | 0,913 | 0,228 | 0,228 | 0,008 | 0,236 | 3,054 |
| 180 | 0,006 | 1 | 7,722 | 1,208 | 0,302 | 0,302 | 0,005 | 0,307 | 3,970 |
| 240 | 0,011 | 1 | 7,722 | 1,945 | 0,486 | 0,486 | 0,006 | 0,492 | 6,374 |
| 300 | 0,008 | 1 | 7,722 | 1,503 | 0,376 | 0,376 | 0,010 | 0,385 | 4,991 |
| 360 | 0,012 | 1 | 7,722 | 2,092 | 0,523 | 0,523 | 0,008 | 0,531 | 6,870 |
| 420 | 0,003 | 1 | 7,722 | 0,766 | 0,192 | 0,192 | 0,010 | 0,202 | 2,616 |
| 480 | 0,008 | 1 | 7,722 | 1,503 | 0,376 | 0,376 | 0,004 | 0,380 | 4,915 |

2. Formula 2 (10:0)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,103 | 1 | 7,383 | 15,499 | 3,875 | 3,875 | 0,000 | 3,875 | 52,484 |
| 10 | 0,109 | 1 | 7,383 | 16,383 | 4,096 | 4,096 | 0,077 | 4,173 | 56,527 |
| 15 | 0,115 | 1 | 7,383 | 17,267 | 4,317 | 4,317 | 0,082 | 4,399 | 59,580 |
| 30 | 0,121 | 1 | 7,383 | 18,151 | 4,538 | 4,538 | 0,086 | 4,624 | 62,633 |
| 45 | 0,142 | 1 | 7,383 | 21,245 | 5,311 | 5,311 | 0,091 | 5,402 | 73,170 |
| 60 | 0,165 | 1 | 7,383 | 24,634 | 6,158 | 6,158 | 0,106 | 6,265 | 84,854 |
| 120 | 0,177 | 1 | 7,383 | 26,401 | 6,600 | 6,600 | 0,123 | 6,724 | 91,071 |
| 180 | 0,163 | 1 | 7,383 | 24,339 | 6,085 | 6,085 | 0,132 | 6,217 | 84,206 |
| 240 | 0,153 | 1 | 7,383 | 22,866 | 5,716 | 5,716 | 0,122 | 5,838 | 79,077 |
| 300 | 0,144 | 1 | 7,383 | 21,540 | 5,385 | 5,385 | 0,114 | 5,499 | 74,487 |
| 360 | 0,144 | 1 | 7,383 | 21,540 | 5,385 | 5,385 | 0,108 | 5,493 | 74,397 |
| 420 | 0,143 | 1 | 7,383 | 21,392 | 5,348 | 5,348 | 0,108 | 5,456 | 73,899 |
| 480 | 0,143 | 1 | 7,383 | 21,392 | 5,348 | 5,348 | 0,107 | 5,455 | 73,889 |

3. Formula 3 (9:1)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,1 | 1 | 8,221 | 15,057 | 3,764 | 3,764 | 0,000 | 3,764 | 45,790 |
| 10 | 0,105 | 1 | 8,221 | 15,794 | 3,948 | 3,948 | 0,075 | 4,024 | 48,946 |
| 15 | 0,131 | 1 | 8,221 | 19,624 | 4,906 | 4,906 | 0,079 | 4,985 | 60,640 |
| 30 | 0,154 | 1 | 8,221 | 23,013 | 5,753 | 5,753 | 0,098 | 5,851 | 71,178 |
| 45 | 0,169 | 1 | 8,221 | 25,223 | 6,306 | 6,306 | 0,115 | 6,421 | 78,104 |
| 60 | 0,181 | 1 | 8,221 | 26,991 | 6,748 | 6,748 | 0,126 | 6,874 | 83,615 |
| 120 | 0,189 | 1 | 8,221 | 28,169 | 7,042 | 7,042 | 0,135 | 7,177 | 87,307 |
| 180 | 0,197 | 1 | 8,221 | 29,348 | 7,337 | 7,337 | 0,141 | 7,478 | 90,963 |
| 240 | 0,196 | 1 | 8,221 | 29,201 | 7,300 | 7,300 | 0,147 | 7,447 | 90,587 |
| 300 | 0,194 | 1 | 8,221 | 28,906 | 7,227 | 7,227 | 0,146 | 7,373 | 89,682 |
| 360 | 0,186 | 1 | 8,221 | 27,727 | 6,932 | 6,932 | 0,145 | 7,076 | 86,080 |
| 420 | 0,184 | 1 | 8,221 | 27,433 | 6,858 | 6,858 | 0,139 | 6,997 | 85,112 |
| 480 | 0,177 | 1 | 8,221 | 26,401 | 6,600 | 6,600 | 0,137 | 6,738 | 81,958 |

4. Formula 4 (8:2)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,026 | 1 | 8,394 | 4,155 | 1,039 | 1,039 | 0,000 | 1,039 | 12,374 |
| 10 | 0,044 | 1 | 8,394 | 6,807 | 1,702 | 1,702 | 0,021 | 1,722 | 20,520 |
| 15 | 0,06 | 1 | 8,394 | 9,164 | 2,291 | 2,291 | 0,034 | 2,325 | 27,699 |
| 30 | 0,149 | 1 | 8,394 | 22,276 | 5,569 | 5,569 | 0,046 | 5,615 | 66,892 |
| 45 | 0,185 | 1 | 8,394 | 27,580 | 6,895 | 6,895 | 0,111 | 7,006 | 83,470 |
| 60 | 0,205 | 1 | 8,394 | 30,527 | 7,632 | 7,632 | 0,138 | 7,770 | 92,562 |
| 120 | 0,21 | 1 | 8,394 | 31,263 | 7,816 | 7,816 | 0,153 | 7,968 | 94,932 |
| 180 | 0,209 | 1 | 8,394 | 31,116 | 7,779 | 7,779 | 0,156 | 7,935 | 94,537 |
| 240 | 0,207 | 1 | 8,394 | 30,821 | 7,705 | 7,705 | 0,156 | 7,861 | 93,650 |
| 300 | 0,207 | 1 | 8,394 | 30,821 | 7,705 | 7,705 | 0,154 | 7,859 | 93,633 |
| 360 | 0,207 | 1 | 8,394 | 30,821 | 7,705 | 7,705 | 0,154 | 7,859 | 93,633 |
| 420 | 0,207 | 1 | 8,394 | 30,821 | 7,705 | 7,705 | 0,154 | 7,859 | 93,633 |
| 480 | 0,208 | 1 | 8,394 | 30,969 | 7,742 | 7,742 | 0,154 | 7,896 | 94,072 |

5. Formula 5 (7:3)

| waktu (menit) | Abs | FP | dosis (mg) | X (ppm) | X (mg/250ml) | kadar x fp | faktor koreksi | kadar koreksi | % kadar terdisolusi |
|---------------|-------|----|------------|---------|--------------|------------|----------------|---------------|---------------------|
| 5 | 0,077 | 1 | 8,378 | 11,669 | 2,917 | 2,917 | 0,000 | 2,917 | 34,819 |
| 10 | 0,093 | 1 | 8,378 | 14,026 | 3,506 | 3,506 | 0,058 | 3,565 | 42,549 |
| 15 | 0,121 | 1 | 8,378 | 18,151 | 4,538 | 4,538 | 0,070 | 4,608 | 55,000 |
| 30 | 0,148 | 1 | 8,378 | 22,129 | 5,532 | 5,532 | 0,091 | 5,623 | 67,116 |
| 45 | 0,174 | 1 | 8,378 | 25,959 | 6,490 | 6,490 | 0,111 | 6,601 | 78,784 |
| 60 | 0,174 | 1 | 8,378 | 25,959 | 6,490 | 6,490 | 0,130 | 6,620 | 79,013 |
| 120 | 0,18 | 1 | 8,378 | 26,843 | 6,711 | 6,711 | 0,130 | 6,841 | 81,650 |
| 180 | 0,183 | 1 | 8,378 | 27,285 | 6,821 | 6,821 | 0,134 | 6,956 | 83,022 |
| 240 | 0,194 | 1 | 8,378 | 28,906 | 7,227 | 7,227 | 0,136 | 7,363 | 87,884 |
| 300 | 0,195 | 1 | 8,378 | 29,053 | 7,263 | 7,263 | 0,145 | 7,408 | 88,421 |
| 360 | 0,199 | 1 | 8,378 | 29,643 | 7,411 | 7,411 | 0,145 | 7,556 | 90,188 |
| 420 | 0,193 | 1 | 8,378 | 28,759 | 7,190 | 7,190 | 0,148 | 7,338 | 87,585 |
| 480 | 0,199 | 1 | 8,378 | 29,643 | 7,411 | 7,411 | 0,144 | 7,554 | 90,170 |

| Waktu (menit) | Rata-rata kadar terdisolusi (%) | | | | |
|---------------|---------------------------------|--------|--------|--------|--------|
| | KONTROL | F 10:0 | F 9:1 | F 8:2 | F 7:3 |
| 5 | 5,086 | 52,867 | 49,011 | 10,743 | 36,662 |
| 10 | 5,386 | 56,288 | 51,213 | 18,775 | 41,553 |
| 15 | 5,356 | 57,849 | 60,222 | 30,946 | 55,039 |
| 30 | 5,344 | 64,451 | 72,886 | 71,183 | 66,621 |
| 45 | 5,350 | 72,576 | 81,244 | 86,103 | 78,416 |
| 60 | 5,350 | 85,503 | 85,877 | 94,743 | 81,843 |
| 120 | 5,340 | 91,554 | 89,878 | 96,287 | 85,354 |
| 180 | 5,207 | 83,804 | 92,268 | 96,749 | 86,766 |
| 240 | 5,544 | 81,121 | 94,400 | 96,161 | 88,554 |
| 300 | 5,535 | 78,711 | 91,450 | 96,149 | 88,730 |
| 360 | 5,387 | 78,152 | 89,547 | 96,002 | 89,325 |
| 420 | 5,327 | 77,976 | 85,876 | 95,999 | 90,738 |
| 480 | 5,039 | 77,972 | 83,329 | 95,997 | 92,230 |

Perhitungan disolusi :

$$dosis (mg) = \frac{\text{berat patch}}{\text{berat patch rata - rata}} \times \text{kadar patch rata - rata}$$

$$dosis (mg) = \frac{118,2}{130,895} \times 7,762 = 7,009$$

$$y = bx + a$$

$$0,106 = 0,0067875x - 0,0022$$

$$x (ppm) = \frac{0,106 + 0,0022}{0,0067875} = 15,941 \text{ ppm}$$

$$x \left(\frac{mg}{250ml} \right) = \frac{15,941 \text{ ppm}}{4} = 3,985 \text{ mg}/250ml$$

$$\text{kadar} \times \text{faktor pengenceran} = 3,985 \text{ mg}/250ml \times 1$$

$$= 3,985 \text{ mg}/250ml$$

$$\text{faktor koreksi} = \frac{5}{250} \times 0 = 0$$

$$\text{kadar koreksi} = (\text{kadar} \times \text{faktor pengenceran}) + \text{faktor koreksi}$$

$$\text{kadar koreksi} = 3,985 + 0 = 3,985 \text{ mg}$$

$$\text{kadar terdisolusi} = \frac{3,985}{7,009} \times 100\% = 56,858 \%$$

| Waktu (menit) | Log kadar terdisolusi (%) | | | | |
|------------------|---------------------------|--------|--------|--------|--------|
| | kontrol | f 10:0 | f 9:1 | f 8:2 | f 7:3 |
| 5 | 0,7041 | 1,7224 | 1,6898 | 1,0273 | 1,5639 |
| 10 | 0,7026 | 1,7503 | 1,7092 | 1,2714 | 1,6185 |
| 15 | 0,7277 | 1,7621 | 1,7795 | 1,4892 | 1,7397 |
| 30 | 0,7257 | 1,8078 | 1,8625 | 1,8518 | 1,8236 |
| 45 | 0,7276 | 1,8594 | 1,9096 | 1,9346 | 1,8943 |
| 60 | 0,7277 | 1,9319 | 1,9336 | 1,9764 | 1,9127 |
| 120 | 0,7024 | 1,9617 | 1,9535 | 1,9833 | 1,9309 |
| 180 | 0,6998 | 1,9233 | 1,9650 | 1,9855 | 1,9381 |
| 240 | 0,7115 | 1,9091 | 1,9748 | 1,9828 | 1,9471 |
| 300 | 0,7235 | 1,8957 | 1,9611 | 1,9828 | 1,9480 |
| 360 | 0,7121 | 1,8926 | 1,9519 | 1,9821 | 1,9509 |
| 420 | 0,6889 | 1,8916 | 1,9339 | 1,9821 | 1,9575 |
| 480 | 0,7022 | 1,8916 | 1,9208 | 1,9821 | 1,9648 |

| Akar waktu (menit ^{1/2}) | Kadar terdisolusi (%) | | | | |
|---------------------------------------|-----------------------|--------|--------|--------|--------|
| | KONTROL | F 10:0 | F 9:1 | F 8:2 | F 7:3 |
| 2,236 | 5,086 | 52,867 | 49,011 | 10,743 | 36,662 |
| 3,162 | 5,386 | 56,288 | 51,213 | 18,775 | 41,553 |
| 3,873 | 5,356 | 57,849 | 60,222 | 30,946 | 55,039 |
| 5,477 | 5,344 | 64,451 | 72,886 | 71,183 | 66,621 |
| 6,708 | 5,350 | 72,576 | 81,244 | 86,103 | 78,416 |
| 7,746 | 5,350 | 85,503 | 85,877 | 94,743 | 81,843 |
| 10,954 | 5,340 | 91,554 | 89,878 | 96,287 | 85,354 |
| 13,416 | 5,207 | 83,804 | 92,268 | 96,749 | 86,766 |
| 15,492 | 5,544 | 81,121 | 94,400 | 96,161 | 88,554 |
| 17,321 | 5,535 | 78,711 | 91,450 | 96,149 | 88,730 |
| 18,974 | 5,387 | 78,152 | 89,547 | 96,002 | 89,325 |
| 20,494 | 5,327 | 77,976 | 85,876 | 95,999 | 90,738 |
| 21,909 | 5,039 | 77,972 | 83,329 | 95,997 | 92,230 |

| Log waktu (menit) | Log kadar terdissolusi (%) | | | | |
|-------------------|----------------------------|--------|-------|-------|-------|
| | kontrol | f 10:0 | f 9:1 | f 8:2 | f 7:3 |
| 0,699 | 0,704 | 1,722 | 1,690 | 1,027 | 1,564 |
| 1,000 | 0,703 | 1,750 | 1,709 | 1,271 | 1,619 |
| 1,176 | 0,728 | 1,762 | 1,780 | 1,489 | 1,740 |
| 1,477 | 0,726 | 1,808 | 1,863 | 1,852 | 1,824 |
| 1,653 | 0,728 | 1,859 | 1,910 | 1,935 | 1,894 |
| 1,778 | 0,728 | 1,932 | 1,934 | 1,976 | 1,913 |
| 2,079 | 0,702 | 1,962 | 1,954 | 1,983 | 1,931 |
| 2,255 | 0,700 | 1,923 | 1,965 | 1,985 | 1,938 |
| 2,380 | 0,711 | 1,909 | 1,975 | 1,983 | 1,947 |
| 2,477 | 0,724 | 1,896 | 1,961 | 1,983 | 1,948 |
| 2,556 | 0,712 | 1,893 | 1,952 | 1,982 | 1,951 |
| 2,623 | 0,689 | 1,892 | 1,934 | 1,982 | 1,958 |
| 2,681 | 0,702 | 1,892 | 1,921 | 1,982 | 1,965 |

Nilai AUC (area under curves)

1. Formula 1 (kontrol)

| waktu (menit) | REPLIKASI 1 | REPLIKASI 2 | REPLIKASI 3 |
|---------------|----------------|----------------|----------------|
| 5 | 13,26609 | 13,90766 | 10,97004 |
| 10 | 29,16645 | 21,25364 | 28,12145 |
| 15 | 30,66363 | 20,25502 | 29,65249 |
| 30 | 81,40169 | 84,63608 | 74,72027 |
| 45 | 77,63507 | 88,53479 | 74,43409 |
| 60 | 81,11742 | 85,18327 | 74,43409 |
| 120 | 367,39496 | 354,13914 | 240,50140 |
| 180 | 425,10247 | 313,37374 | 210,73920 |
| 240 | 440,45323 | 216,79532 | 310,32807 |
| 300 | 454,95118 | 201,20050 | 340,94879 |
| 360 | 412,59444 | 214,60657 | 355,82988 |
| 420 | 369,10060 | 310,63781 | 284,57233 |
| 480 | 339,82044 | 367,27162 | 225,90647 |
| AUC total | 3122,66767 | 2291,79515 | 2261,15859 |

2. Formula 2 (10:0)

| waktu (menit) | REPLIKASI 1 | REPLIKASI 2 | REPLIKASI 3 |
|---------------|----------------|----------------|----------------|
| 5 | 142,14428 | 123,14984 | 131,20971 |
| 10 | 287,13144 | 259,00384 | 272,52706 |
| 15 | 291,28804 | 274,47309 | 290,26781 |
| 30 | 976,41295 | 858,75126 | 916,60211 |
| 45 | 1132,16734 | 932,41074 | 1018,52661 |
| 60 | 1249,53490 | 1122,05125 | 1185,18290 |
| 120 | 5401,39844 | 5255,98412 | 5277,74353 |
| 180 | 5298,92844 | 5224,95343 | 5258,28658 |
| 240 | 4997,19371 | 4947,52065 | 4898,48261 |
| 300 | 4928,14470 | 4849,82006 | 4606,92765 |
| 360 | 4895,35430 | 4755,80630 | 4466,53824 |
| 420 | 4894,72372 | 4707,87771 | 4448,87732 |
| 480 | 4894,72372 | 4706,95601 | 4433,61109 |
| AUC total | 39389,14598 | 38018,75830 | 37204,78324 |

3. Formula 3 (9:1)

| waktu (menit) | REPLIKASI 1 | REPLIKASI 2 | REPLIKASI 3 |
|---------------|----------------|----------------|----------------|
| 5 | 126,71865 | 126,38967 | 114,47475 |
| 10 | 257,17621 | 257,66514 | 236,83952 |
| 15 | 286,23477 | 275,56720 | 273,96429 |
| 30 | 1030,13586 | 976,17625 | 988,63172 |
| 45 | 1181,69232 | 1166,60964 | 1119,61682 |
| 60 | 1246,08756 | 1301,22878 | 1212,89918 |
| 120 | 5206,08376 | 5484,19857 | 5127,68025 |
| 180 | 5470,60291 | 5574,46343 | 5348,11695 |
| 240 | 5692,62554 | 5661,04978 | 5446,50699 |
| 300 | 5754,78031 | 5563,71087 | 5408,06498 |
| 360 | 5582,48150 | 5434,39727 | 5272,84588 |
| 420 | 5347,73882 | 5304,51774 | 5135,74501 |
| 480 | 5140,74898 | 5075,60153 | 5012,08539 |
| AUC total | 42323,10719 | 42201,57587 | 40697,47173 |

4. Formula 4 (8:2)

| waktu (menit) | REPLIKASI 1 | REPLIKASI 2 | REPLIKASI 3 |
|---------------|----------------|----------------|----------------|
| 5 | 27,28389 | 22,35614 | 30,93541 |
| 10 | 76,28198 | 62,86724 | 82,23554 |
| 15 | 127,82030 | 124,53921 | 120,54718 |
| 30 | 802,80954 | 785,65681 | 709,43454 |
| 45 | 1252,14692 | 1159,04865 | 1127,72079 |
| 60 | 1419,73113 | 1329,04386 | 1320,24436 |
| 120 | 5959,76039 | 5608,08912 | 5624,82124 |
| 180 | 6035,68486 | 5653,50971 | 5684,05926 |
| 240 | 6008,87139 | 5707,43007 | 5645,62036 |
| 300 | 5994,19454 | 5695,21167 | 5618,50251 |
| 360 | 5993,91229 | 5681,66517 | 5617,97595 |
| 420 | 5993,91229 | 5668,11868 | 5617,97595 |
| 480 | 5993,91229 | 5654,57218 | 5631,13996 |
| AUC total | 45686,32181 | 43152,10851 | 42831,21306 |

5. Formula 5 (7:3)

| waktu (menit) | REPLIKASI 1 | REPLIKASI 2 | REPLIKASI 3 |
|---------------|----------------|----------------|----------------|
| 5 | 93,99007 | 93,92473 | 87,04735 |
| 10 | 197,67384 | 195,51150 | 193,42096 |
| 15 | 229,84926 | 250,71426 | 243,87325 |
| 30 | 882,23857 | 939,25195 | 915,86997 |
| 45 | 1076,93867 | 1092,14569 | 1094,25108 |
| 60 | 1174,52313 | 1247,81552 | 1183,47461 |
| 120 | 4946,70855 | 5281,08697 | 4819,89068 |
| 180 | 5139,06448 | 5411,56369 | 4940,17429 |
| 240 | 5209,79145 | 5441,82319 | 5127,19419 |
| 300 | 5237,92149 | 5428,49790 | 5289,15501 |
| 360 | 5238,45730 | 5428,22029 | 5358,26533 |
| 420 | 5305,43360 | 5567,02532 | 5333,20624 |
| 480 | 5467,51624 | 5666,96494 | 5332,67868 |
| AUC total | 40200,10667 | 42044,54596 | 39918,50166 |

Perhitungan :

$$AUC_0^1 = (\% \text{ kadar terdisolusi menit 1} + \% \text{ kadar terdisolusi menit 0}) \times \left(\frac{1-0}{2}\right)$$

$$AUC_0^5 = (56,858 + 0) \times \left(\frac{5-0}{2}\right) = 142,14428$$

Nilai koefisien korelasi orde nol

| Formula Patch | Nilai r |
|---------------|---------|
| kontrol | 0,065 |
| Formula 10:0 | 0,504 |
| Formula 9:1 | 0,609 |
| Formula 8:2 | 0,639 |
| Formula 7:3 | 0,741 |

Nilai koefisien korelasi orde satu

| Formula <i>Patch</i> | Nilai r |
|----------------------|---------|
| kontrol | 0,457 |
| Formula 10:0 | 0,533 |
| Formula 9:1 | 0,604 |
| Formula 8:2 | 0,582 |
| Formula 7:3 | 0,690 |

Nilai koefisien korelasi orde satu

| Formula <i>Patch</i> | Nilai r |
|----------------------|---------|
| kontrol | 0,042 |
| Formula 10:0 | 0,649 |
| Formula 9:1 | 0,751 |
| Formula 8:2 | 0,764 |
| Formula 7:3 | 0,849 |

Nilai koefisien korelasi higuchi

| Formula <i>Patch</i> | Nilai r |
|----------------------|---------|
| kontrol | 0,042 |
| Formula 10:0 | 0,649 |
| Formula 9:1 | 0,751 |
| Formula 8:2 | 0,764 |
| Formula 7:3 | 0,849 |

Nilai koefisien korelasi dan nilai eksponensial difusi korsmeyer-peppas

| formula | r | n |
|---------|-------|----------|
| kontrol | 0,276 | -0,00546 |
| 10:0 | 0,826 | 0,09442 |
| 9:1 | 0,89 | 0,13187 |
| 8:2 | 0,865 | 0,42087 |
| 7:3 | 0,928 | 0,18918 |

Lampiran 8. Data statistik *swelling index***Descriptive Statistics**

| | N | Mean | Std. Deviation | Minimum | Maximum |
|----------------|----|----------|----------------|---------|---------|
| swelling index | 15 | 191,5673 | 63,13563 | 94,58 | 320,97 |

One-Sample Kolmogorov-Smirnov Test

| | | swelling index |
|----------------------------------|----------------|----------------|
| N | | 15 |
| Normal Parameters ^{a,b} | Mean | 191,5673 |
| | Std. Deviation | 63,13563 |
| Most Extreme Differences | Absolute | ,146 |
| | Positive | ,146 |
| | Negative | -,074 |
| Kolmogorov-Smirnov Z | | ,564 |
| Asymp. Sig. (2-tailed) | | ,908 |

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

swelling index

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| ,481 | 4 | 10 | ,749 |

ANOVA

swelling index

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|-------------|-------|------|
| Between Groups | 41131,538 | 4 | 10282,885 | 7,008 | ,006 |
| Within Groups | 14673,965 | 10 | 1467,396 | | |
| Total | 55805,503 | 14 | | | |

Multiple Comparisons

swelling index
Scheffe

| (I) formula patch | (J) formula patch | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | | | |
|-------------------|-------------------|-----------------------|------------|-------------|-------------------------|-------------|-----------|----------|
| | | | | | Lower Bound | Upper Bound | | |
| dimension n2 | kontrol | 10:0 | 69,41000 | 31,27722 | ,358 | -47,2511 | 186,0711 | |
| | | dimension3 | 9:1 | 11,72667 | 31,27722 | ,997 | -104,9344 | 128,3877 |
| | | | 8:2 | -88,79667 | 31,27722 | ,168 | -205,4577 | 27,8644 |
| | | | 7:3 | -35,17667 | 31,27722 | ,861 | -151,8377 | 81,4844 |
| | 10:0 | dimension3 | kontrol | -69,41000 | 31,27722 | ,358 | -186,0711 | 47,2511 |
| | | | 9:1 | -57,68333 | 31,27722 | ,525 | -174,3444 | 58,9777 |
| | | | 8:2 | -158,20667* | 31,27722 | ,008 | -274,8677 | -41,5456 |
| | | | 7:3 | -104,58667 | 31,27722 | ,085 | -221,2477 | 12,0744 |
| | 9:1 | dimension3 | kontrol | -11,72667 | 31,27722 | ,997 | -128,3877 | 104,9344 |
| | | | 10:0 | 57,68333 | 31,27722 | ,525 | -58,9777 | 174,3444 |
| | | | 8:2 | -100,52333 | 31,27722 | ,102 | -217,1844 | 16,1377 |
| | | | 7:3 | -46,90333 | 31,27722 | ,696 | -163,5644 | 69,7577 |
| 8:2 | dimension3 | kontrol | 88,79667 | 31,27722 | ,168 | -27,8644 | 205,4577 | |
| | | 10:0 | 158,20667* | 31,27722 | ,008 | 41,5456 | 274,8677 | |
| | | 9:1 | 100,52333 | 31,27722 | ,102 | -16,1377 | 217,1844 | |
| | | 7:3 | 53,62000 | 31,27722 | ,589 | -63,0411 | 170,2811 | |
| 7:3 | dimension3 | kontrol | 35,17667 | 31,27722 | ,861 | -81,4844 | 151,8377 | |
| | | 10:0 | 104,58667 | 31,27722 | ,085 | -12,0744 | 221,2477 | |
| | | 9:1 | 46,90333 | 31,27722 | ,696 | -69,7577 | 163,5644 | |
| | | 8:2 | -53,62000 | 31,27722 | ,589 | -170,2811 | 63,0411 | |

*. The mean difference is significant at the 0.05 level.

Lampiran 9. Data statistik disolusi efisiensi

Descriptive Statistics

| | N | Mean | Std. Deviation | Minimum | Maximum |
|------------|----|-----------|----------------|---------|---------|
| DE 480 (%) | 15 | 69,448228 | 33,6728889 | 4,7286 | 97,1634 |

One-Sample Kolmogorov-Smirnov Test

| | | DE 480 (%) |
|----------------------------------|----------------|------------|
| N | | 15 |
| Normal Parameters ^{a,b} | Mean | 69,448228 |
| | Std. Deviation | 33,6728889 |
| Most Extreme Differences | Absolute | ,371 |
| | Positive | ,205 |
| | Negative | -,371 |
| Kolmogorov-Smirnov Z | | 1,435 |
| Asymp. Sig. (2-tailed) | | ,033 |

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

DE 480 (%)

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| 2,804 | 4 | 10 | ,085 |

ANOVA

DE 480 (%)

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|-------------|---------|------|
| Between Groups | 15738,471 | 4 | 3934,618 | 290,127 | ,000 |
| Within Groups | 135,617 | 10 | 13,562 | | |
| Total | 15874,088 | 14 | | | |

Multiple Comparisons

DE 480 (%)
Scheffe

| (I) formula patch | (J) formula patch | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | | | |
|-------------------|-------------------|-------------------------|--------------------------|--------------------------|-------------------------|-------------|------------|------------|
| | | | | | Lower Bound | Upper Bound | | |
| dimension2 | kontrol | formula 10:0 | -71,9380464 [*] | 3,0068477 | ,000 | -83,153306 | -60,722787 | |
| | | dimension3 | formula 9:1 | -82,5485355 [*] | 3,0068477 | ,000 | -93,763795 | -71,333276 |
| | | | formula 8:2 | -87,0842173 [*] | 3,0068477 | ,000 | -98,299477 | -75,868958 |
| | | | formula 7:3 | -78,4988347 [*] | 3,0068477 | ,000 | -89,714094 | -67,283575 |
| | formula 10:0 | kontrol | 71,9380464 [*] | 3,0068477 | ,000 | 60,722787 | 83,153306 | |
| | | dimension3 | formula 9:1 | -10,6104891 | 3,0068477 | ,066 | -21,825748 | ,604770 |
| | | | formula 8:2 | -15,1461709 [*] | 3,0068477 | ,008 | -26,361430 | -3,930912 |
| | | | formula 7:3 | -6,5607882 | 3,0068477 | ,373 | -17,776048 | 4,654471 |
| | formula 9:1 | kontrol | 82,5485355 [*] | 3,0068477 | ,000 | 71,333276 | 93,763795 | |
| | | dimension3 | formula 10:0 | 10,6104891 | 3,0068477 | ,066 | -,604770 | 21,825748 |
| | | | formula 8:2 | -4,5356818 | 3,0068477 | ,691 | -15,750941 | 6,679578 |
| | | | formula 7:3 | 4,0497008 | 3,0068477 | ,768 | -7,165558 | 15,264960 |
| formula 8:2 | kontrol | 87,0842173 [*] | 3,0068477 | ,000 | 75,868958 | 98,299477 | | |
| | dimension3 | formula 10:0 | 15,1461709 [*] | 3,0068477 | ,008 | 3,930912 | 26,361430 | |
| | | formula 9:1 | 4,5356818 | 3,0068477 | ,691 | -6,679578 | 15,750941 | |
| | | formula 7:3 | 8,5853826 | 3,0068477 | ,165 | -2,629877 | 19,800642 | |
| formula 7:3 | kontrol | 78,4988347 [*] | 3,0068477 | ,000 | 67,283575 | 89,714094 | | |
| | dimension3 | formula 10:0 | 6,5607882 | 3,0068477 | ,373 | -4,654471 | 17,776048 | |
| | | formula 9:1 | -4,0497008 | 3,0068477 | ,768 | -15,264960 | 7,165558 | |
| | | formula 8:2 | -8,5853826 | 3,0068477 | ,165 | -19,800642 | 2,629877 | |

*. The mean difference is significant at the 0.05 level.

Lampiran 10. Surat keterangan permintaan bahan

KONIMEX

Sukoharjo, 01 April 2013

Nomor : 003/KX-RP/IV/13
 Perihal : Bahan Baku
 Lamp. : Salbutamol Sulfat 20 g beserta CoA.

Kepada :
 Yth. Dekan Fakultas Farmasi
 Universitas Setia Budi
 Jl. Let. Jend. Sutoyo
 Solo 57127

up. Ibu Prof. Dr. R.A. Oetari SU., MM., Apt.

Dengan hormat,

Sehubungan dengan surat Ibu nomor : 674.26/FF.0/A/SPM/III/2013 tertanggal 26 Maret 2013 perihal Permohonan permintaan bahan baku Salbutamol Sulfat 20 g untuk penelitian bagi mahasiswa :


| No | Nama Mahasiswa | NIM |
|----|-----------------|------------|
| 1 | Ririn Kristiana | 15092763 A |

melalui surat ini kami berikan bahan baku beserta CoA-nya sebagai berikut :

1. Salbutamol Sulfat sebanyak 20 g

Demikian, agar diterima dengan baik.

Hormat kami,
 PT. KONIMEX


Drs. J. Sunarto, Apt.
 Apoteker Penanggung Jawab

c.c. : file

CERTIFICATE OF ANALYSIS

Cipla

| TEST | STANDARD | RESULT |
|---|---|--|
| BATCH NO. : 55/117/10-11 A. R. NO. : PR10050098 Qty. : 1 x 25 kgs | | |
| SALBUTAMOL SULPHATE | | MFG. DT. : 24/03/2010 EXP. DT. : 23/07/2015 |
| DESCRIPTION | White or almost white, crystalline powder. | Meets the requirement |
| SOLUBILITY | Freely soluble in water, practically insoluble or very slightly soluble in ethanol (96 %) and in methylene chloride. | Meets the requirement |
| IDENTIFICATION | B) The infrared spectrum of the sample is concordant with the spectrum obtained with salbutamol sulphate CRS. E) It gives reaction (a) of sulphates. | Meets the requirement |
| APPEARANCE OF SOLUTION | Solution S is clear and not more intensely coloured than reference solution BY ₆ . | Meets the requirement |
| OPTICAL ROTATION (°) | -0.100 to +0.100. | Nil |
| ACIDITY OR ALKALINITY | Not more than 0.4 ml of 0.01 M hydrochloric acid is required to change the colour of the indicator to red. | Meets the requirement |
| IMPURITY J (%) | NMT 0.20 | 0.01 |
| RELATED SUBSTANCES (%) | | Meets the requirement |
| Impurity A | NMT 0.30 | Not detected |
| Impurity B | NMT 0.30 | 0.18 |
| Impurity C | NMT 0.30 | 0.22 |
| Impurity D | NMT 0.30 | 0.09 |
| Impurity E | NMT 0.30 | Not detected |
| Impurity F | NMT 0.30 | 0.05 |
| Impurity G | NMT 0.30 | Not detected |
| Impurity H | NMT 0.30 | Not detected |
| Impurity I | NMT 0.30 | Not detected |
| Total Impurities | NMT 1.00 | 0.54 |
| BORON (ppm) | NMT 50 | Meets the requirement |
| LOSS ON DRYING (%) | NMT 0.50 | 0.06 |
| SULPHATED ASH (%) | NMT 0.10 | 0.02 |
| ASSAY (%) C ₂₀ H ₂₄ N ₂ O ₅ , (dried substance) | NLT 98.0 NMT 101.0 | Meets the requirement 100.8 |
| DATE OF ANALYSIS : 15.09.2010 | | |
| REMARK : COMPLIES WITH BP'2010 STANDARD | | |
| QUALITY CONTROL : <i>P. J. J.</i> | QUALITY ASSURANCE : <i>Shah</i> | |
| DATE : 20.09.2010 | DATE : 20.09.2010 | |

Cipla Ltd., Mumbai Central, Mumbai 400 008, India
 Phone: (91 22) 23095455, 23095521 Fax: (91 22) 23088434, 23097162
 e-mail: savio@cipla.com WebSite: www.cipla.com

QCP 18/11/1
Page 1 of 1

Lampiran 11. Cetakan *patch*



Lampiran 12. Alat disolusi dan spektrofotometer



Alat disolusi



Spektrofotometer