LAMPIRAN A

HASIL UJI MUTU FISIK GRANUL

Mutu fisik	F A	F B	F C	F D	Persyaratan
Kadar air (MC) (%)	3,59 ± 0,47	3,63 ±0,08	3,48 ±0,23	3,77 ± 0,40	3-5% (Voigt, 1995)
Waktu alir (detik)	8,65 ±0,04	8,74 ±0,09	8,81 ±0,03	8,72 ±0,04	Tidak lebih dari 10 detik untuk 100 gr (Banker & Anderson, 1986)
Sudut diam (º)	28,17 ±0,59	29,03 ±0,38	28,47 ±0,65	29,23 ±0,47	25-30 Baik (Wells, 1988)
Indeks Kompresibilitas (%)	13,67 ±1,15	13,33 ±1,53	12,33 ±1,53	12,67 ±2,08	5-15% Baik (Wells, 1988)

LAMPIRAN B

HASIL UJI KEKERASAN TABLET

Replikasi I

No	Kekerasan Tablet Kaptopril (kp)			
	Formula A	Formula B	Formula C	Formula D
1.	15.36	13.74	11.03	10.15
2.	15.47	13.86	11.24	10.12
3.	15.33	13.75	11.73	10.41
4.	15.51	13.91	11.23	10.16
5.	15.58	13.64	11.21	10.21
6.	15.49	13.62	11.15	10.19
7.	15.54	13.68	11.49	10.07
8.	15.61	13.83	11.31	10.18
9	15.58	13.76	11.25	10.25
10.	15.,63	13.08	11.29	10.02
Rata-rata ± SD	15.50 ± 0.10	13.69 ± 0.23	11.29 ± 0.19	10.19 ± 0.12
SDrel	0.63	1.7	1.71	1.15

Replikas*i* II

N0.	Kekerasan Tablet Kaptopril (kp)			
	Formula A	Formula B	Formula C	Formula D
1.	15.53	13.98	11.01	10.19
2.	15.67	13.79	11.28	10.23
3.	15.41	13.82	11.36	10.16
4.	15.58	13.65	11.25	10.11
5.	15.44	13.17	11.32	10.21
6.	15.56	13.75	11.51	10.33
7.	15.38	13.93	11.23	10.36
8.	15.54	13.73	11.49	10.41
9	15.59	13.64	11.21	10.15
10.	15.47	13.37	11.26	10.38
Rata-rata ± SD	15.52 ± 0.10	13.68 ± 0.25	11.29 ± 0.14	10.26 ± 0.12
SDrel	1,28	1,17	1,64	1,58

Replikasi III

N0.	Kekerasan Tablet Kaptopril (kp)			
	Formula A	Formula B	Formula C	Formula D
1.	15.29	13.26	11.23	10.23
2.	15.34	13.24	11.14	10.32
3.	15.57	13.25	11.24	10.12
4.	15.48	13.31	11.49	10.07
5.	15.35	13.26	11.32	10.15
6.	15.58	13.23	11.19	10.19
7.	15.32	13.15	11.23	10.42
8.	15.47	13.09	11.05	10.21
9	15.56	13.78	11.37	10.05
10.	15.59	13.16	11.27	10.22
Rata-rata ± SD	15.46 ± 0.12	13.27 ± 0.19	11.25 ± 0.12	10.18 ± 0.12
SDrel	0.77	1.39	1.17	1.03

LAMPIRAN C

HASIL UJI KERAPUHAN TABLET KAPTOPRIL

Formula A

Replikasi	Berat Awal (g)	Berat Akhir (g)	Kerapuhan (%)
I	6.05	6.04	0.16529
II	6.20	6.19	0.16129
III	6.18	6.17	0.16181
		Rata-rata=	0.163
		SD=	0.002
		KV=	1.335

Formula B

Replikasi	Berat Awal (g)	Berat Akhir (g)	Kerapuhan (%)
I	6.16	6.13	0.48701
II	6.19	6.16	0.48465
III	6.17	6.14	0.48622
		Rata-rata=	0.486
		SD=	0.001
		KV=	0.247

Formula C

Replikasi	Berat Awal (g)	Berat Akhir (g)	Kerapuhan (%)
I	6.12	6.10	0.32680
II	6.13	6.11	0.32626
III	6.17	6.15	0.32415
		Rata-rata=	0.326
		SD=	0.001
		KV=	0.430

Formula D

Replikasi	Berat Awal (g)	Berat Akhir (g)	Kerapuhan (%)
I	6.09	6.06	0.49261
II	6.15	6.12	0.48780
III	6.18	6.15	0.48544
		Rata-rata=	0.48862
		SD=	0.003655363
		KV=	0.748103122

LAMPIRAN D

HASIL UJI KESERAGAMAN BOBOT TABLET

Replikasi

No	F1		F2		F3		F4	
	Bobot	**Y (%)**	**Bobot**	**Y(%)**	**Bobot**	**Y(%)**	**Bobot**	**Y(%)**
1	300.3	100.92	300.8	99.73	301.3	100.13	301.8	100.04
2	301.3	101.26	301.1	99.83	300.9	99.99	300.5	99.61
3	298.7	100.39	298.7	99.04	299.6	99.56	299.6	99.31
4	302.1	101.53	300.4	99.6	299.7	99.59	300.7	99.67
5	299.2	100.55	300.9	99.77	300.7	99.93	298.9	99.08
6	300.4	100.96	298.5	98.97	302.5	100.52	301.8	100.04
7	298.1	100.18	302.2	100.2	300.2	99.76	299.9	99.41
8	302.5	101.66	299.3	99.24	298.6	99.23	301.3	99.87
9	297.3	99.92	301.6	100	301.3	100.13	297.6	98.65
10	300.3	100.92	300.5	99.63	300.8	99.96	302.7	100.34
X rata	300.02	100.83	300.4	99.6	300.6	99.88	300.5	99.6
PK (%)	100.83		99.6		99.88		99.6	
SD	0.57		0.4		0.36		0.51	
KV	0.57		0.4		0.36		0.51	

Replikasi 2

No	F1		F2		F3		F4	
	Bobot	**Y (%)**	**Bobot**	**Y(%)**	**Bobot**	**Y(%)**	**Bobot**	**Y(%)**
1	302.3	100.47	300.5	99.13	301.3	100.75	300.8	100.68
2	297.4	98.84	298.8	98.57	299.8	100.25	298.4	99.87
3	301.2	100.11	301.7	99.52	298.6	99.85	301.6	100.94
4	302.9	100.67	299.6	98.83	300.4	100.45	300.7	100.64
5	300.7	99.94	302.3	99.72	301.2	100.72	299.8	100.34
6	299.9	99.67	300.9	99.26	299.3	100.09	302.1	101.11
7	302.6	100.57	299.9	98.93	300.7	100.55	300.5	100.58
8	295.4	98.18	301.4	99.42	301.5	100.82	299.4	100.21
9	303.8	100.97	299.7	98.86	299.9	100.29	300.8	100.68
10	302.9	100.67	301.8	99.56	300.6	100.52	300.7	100.64
X rata	300.9	100.01	300.7	99.18	300.3	100.43	300.5	100.57
PK (%)	100.01		99.18		100.43		100.57	
SD	0.89		0.38		0.31		0.36	
KV	0.89		0.38		0.31		0.35	

Replikasi 3

No	F1		F2		F3		F4	
	Bobot	**Y (%)**	**Bobot**	**Y(%)**	**Bobot**	**Y(%)**	**Bobot**	**Y(%)**
1	301.3	100.93	300.6	99.41	300.9	99.85	301.2	99.46
2	300.5	100.66	298.7	98.78	299.8	99.48	300.5	99.23
3	298.4	99.96	300.9	99.51	300.4	99.68	299.8	99
4	300.2	100.56	299.6	99.08	298.7	99.12	301.4	99.53
5	299.7	100.4	301.8	99.81	296.5	98.39	298.7	98.64
6	300.4	100.63	300.2	99.28	300.8	99.82	300.3	99.16
7	301.3	100.93	299.8	99.15	302.3	100.31	299.9	99.03
8	304.2	101.9	298.5	98.72	299.5	99.38	301.5	99.56
9	298.3	99.93	302.2	99.94	300.7	99.78	299.4	98.87
10	302.1	101.2	300.9	99.51	301.9	100.18	300.8	99.33
X rata	300.6	100.71	300.3	99.32	300.2	99.6	300.4	99.18
PK (%)	100.71		99.32		99.6		99.18	
SD	0.58		0.4		0.55		0.3	
KV	0.58		0.4		0.56		0.3	

LAMPIRAN E

HASIL PENETAPAN KADAR TABLET KAPOPRIL

Formula A

Replikasi	Absorbansi	C Sampel	C teotiris	Kadar %
I	0.6265	9.176056338	9.057	101.3145229
II	0.6281	9.198591549	9.108	100.9946371
III	0.6273	9.187323944	9.171	100.1779952
			$\bar{x}$ =	100.8290518
			SD =	0.586078203
			KV =	0.581259262

Formula B

Replikasi	Absorbansi	C Sampel	C teotiris	Kadar %
I	0.6290	9.211267606	9.003	102.3133134
II	0.6275	9.190140845	9.075	101.2687696
III	0.6314	9.245070423	9.087	101.7395226
			$\bar{x}$ =	101.7738686
			SD =	0.523118197
			KV =	0.514000504

Formula C

Replikasi	Absorbansi	C Sampel	C teotiris	Kadar %
I	0.6310	9.23943662	9.006	100.695512
II	0.6327	9.263380282	9.057	102.433289
III	0.6273	9.187323944	9.219	102.406529
			$\bar{x}$ =	101.5090331
			SD =	0.995670978
			KV =	0.980869334

Formula D

Replikasi	Absorbansi	C Sampel	C teotiris	Kadar %
I	0.6330	9.267605634	9.054	103.021306
II	0.6362	9.312676056	9.156	102.55335
III	0.6336	9.276056338	9.252	100.020895
			$\bar{x}$ =	101.4434791
			SD =	1.61424788
			KV =	1.591278113

LAMPIRAN F

HASIL UJI DISOLUSI TABLET LEPAS LAMBAT KAPTOPRIL

Formula A

Waktu	Replikasi			Rata-rata	SD	KV
	I	II	III			
30	40.36	40.64	40.92	40.64	0.23	0.56
60	42.59	42.31	42.59	42.50	0.13	0.31
90	46.91	42.87	44.26	44.68	1.68	3.75
120	48.44	44.82	47.32	46.86	1.51	3.23
180	51.64	44.96	50.52	49.04	2.92	5.96
240	52.47	53.31	53.17	52.98	0.37	0.69
300	54.7	53.73	53.86	54.10	0.43	0.79
360	55.67	55.53	55.81	55.67	0.11	0.21

Formula B

Waktu	Replikasi			Rata-rata	SD	KV
	I	II	III			
30	46.34	46.2	46.62	46.39	0.17	0.38
60	47.17	46.89	48.84	47.63	0.86	1.81
90	49.53	50.36	50.50	50.13	0.43	0.85
120	53.27	52.30	52.86	52.81	0.40	0.75
180	55.36	56.05	55.49	55.63	0.30	0.54
240	58.27	57.71	58.13	58.04	0.24	0.41
300	59.10	59.93	59.66	59.56	0.35	0.58
360	60.63	60.21	60.49	60.44	0.17	0.29

Formula C

Waktu	Replikasi			Rata-rata	SD	KV
	I	II	III			
30	59.94	60.54	60.27	60.25	0.25	0.41
60	61.64	62.06	61.92	61.87	0.17	0.28
90	63.85	63.57	63.16	63.53	0.28	0.45
120	65.5	65.63	66.05	65.73	0.23	0.36
180	67.01	67.29	66.87	67.06	0.17	0.26
240	70.17	69.9	70.45	70.17	0.22	0.32
300	72.79	73.2	73.06	73.02	0.17	0.23
360	73.89	73.75	74.03	73.89	0.11	0.15

Formula D

Waktu	Replikasi			Rata-rata	SD	KV
	I	II	III			
30	79.42	79.83	79.14	79.46	0.28	0.36
60	80.11	81.5	80.94	80.85	0.57	0.71
90	81.22	83.58	81.50	82.10	1.05	1.28
120	83.3	84.55	83.16	83.67	0.62	0.75
180	84.41	87.18	83.99	85.19	1.42	1.66
240	86.9	88.84	87.60	87.78	0.80	0.91
300	89.81	91.06	90.09	90.32	0.54	0.59
360	93.28	93.42	93.14	93.28	0.11	0.12

LAMPIRAN G

HASIL UJI *FLOATING LAG TIME* TABLET LEPAS LAMBAT KAPTOPRIL

Formula A

Replikasi	*Floating lag time* (menit)	Rata-rata	SD	KV (%)
I	1.79			
II	1.75	1.77	0.030551	1.73
III	1.81			

Formula B

Replikasi	*Floating lag time* (menit)	Rata-rata	SD	KV (%)
I	0.73			
II	0.77	0.75	0.061101	8.15
III	0.85			

Formula C

Replikasi	*Floating lag time* (menit)	Rata-rata	SD	KV (%)
I	0.59			
II	0.62	0.605	0.025166	4.16
III	0.57			

Formula D

Replikasi	*Floating lag time* (menit)	Rata-rata	SD	KV (%)
I	0.37			
II	0.35	0.36	0.025166	6.99
III	0.40			

LAMPIRAN H

HASIL KESERAGAMAN KANDUNGAN

Hasil Uji Keseragaman Kandungan Tablet Formula A replikasi I

Replikasi	Absorbansi	C sampel	W sampel (mg)	C teoritis	Kadar (%)
1	0.634	9.2816901	300.3	9.009	103.0268636
2	0.629	9.2112676	299.8	8.994	102.415695
3	0.623	9.1267606	299.9	8.997	101.4422648
4	0.631	9.2394366	299.7	8.991	102.7631701
5	0.639	9.3521127	300.2	9.006	103.8431343
6	0.635	9.2957746	299.6	8.988	103.424284
7	0.628	9.1971831	300.1	9.003	102.156871
8	0.641	9.3802817	300.4	9.012	104.08657
9	0.637	9.3239437	303.7	9.111	102.337215
10	0.636	9.3098592	299.8	8.994	103.5118874
				Rata-rata ± SD =	102.90 ± 0.83
				KV =	0.807249218

Hasil Uji Keseragaman Kandungan Tablet Formula A replikasi II

Replikasi	Absorbansi	C sampel	W sampel (mg)	C teoritis	Kadar (%)
1	0.628	9.1971831	303.5	9.105	101.0124448
2	0.637	9.3239437	305.1	9.153	101.8676244
3	0.625	9.1549296	300.4	9.012	101.5859918
4	0.638	9.3380282	302.7	9.081	102.830395
5	0.626	9.1690141	300.5	9.015	101.7084202
6	0.634	9.2816901	306.9	9.207	100.8112321
7	0.638	9.3380282	304.2	9.126	102.3233418
8	0.629	9.2112676	300.8	9.024	102.0752173
9	0.642	9.3943662	301.3	9.039	103.9314769
10	0.623	9.1267606	300.7	9.021	101.1723818
				Rata-rata ± SD =	101.93 ± 0.93
				KV =	0.915133726

Hasil Uji Keseragaman Kandungan Tablet Formula A replikasi III

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0.632	9.2535211	306.2	9,186	100.7350438
2	0.637	9.3239437	301.5	9,045	103.0839543
3	0.626	9.1690141	304.7	9,141	100.3064663
4	0.642	9.3943662	305.9	9,171	102.3685976
5	0.635	9.2957746	302.6	9,078	102.3989276
6	0.628	9.1971831	307.1	9,213	99.82831975
7	0.634	9.2816901	302.8	9,084	102.1762455
8	0.624	9.1408451	301.3	9,039	101.1267294
9	0.632	9.2535211	306.4	9,192	100.6692899
10	0.639	9.3521127	307.2	9,216	101.4769171
				Rata-rata ± SD =	101.42±1.06
				KV =	1.044242059

Hasil Uji Keseragaman Kandungan Tablet Formula B replikasi I

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0.636	9.3098592	303.5	9.105	102.2499633
2	0.633	9.2676056	306.2	9.186	100.8883696
3	0.625	9.1549296	307.1	9.213	99.36969041
4	0.631	9.2394366	306.4	9.192	100.5160642
5	0.627	9.1830986	305.9	9.177	100.0664552
6	0.639	9.3521127	300.8	9.024	103.6360004
7	0.624	9.1408451	301.4	9.042	101.0931771
8	0.638	9.3380282	307.3	9.219	101.291118
9	0.624	9.1408451	306.9	9.207	99.28147139
10	0.642	9.3943662	301.5	9.045	103.862534
				Rata-rata ± SD =	101.26 ± 1.60
				KV =	1.579923467

Hasil Uji Keseragaman Kandungan Tablet Formula B replikasi II

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0.634	9.2816901	300.3	9.009	103.0268636
2	0.626	9.1690141	300.7	9.021	101.6407725
3	0.633	9.2676056	306.2	9.186	100.8883696
4	0.628	9.1971831	301.5	9.045	101.6825108
5	0.635	9.2957746	302.9	9.087	102.2975091
6	0.623	9.1267606	308.1	9.243	98.74240575
7	0.641	9.3802817	300.4	9.012	104.08657
8	0.625	9.1549296	304.5	9.135	100.2181672
9	0.639	9.3521127	306.7	9.201	101.6423506
10	0.627	9.1830986	302.8	9.084	101.0909136
				Rata-rata ± SD=	101.53 ± 1.47
				KV =	1.450123781

Hasil Uji Keseragaman Kandungan Tablet Formula B replikasi III

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0.632	9.2535211	303.5	9.105	101.631204
2	0.638	9.3380282	305.1	9.153	102.021503
3	0.626	9.1690141	302.8	9.084	100.9358662
4	0.622	9.1126761	300.7	9.021	101.0162516
5	0.635	9.2957746	304.2	9.126	101.8603402
6	0.621	9.0985915	300.6	9.018	100.8936743
7	0.637	9.3239437	300.2	9.006	103.5303538
8	0.628	9.1971831	301.7	9.051	101.6151044
9	0.639	9.3521127	306.4	9.192	101.7418698
10	0.624	9.1408451	302.5	9.075	100.7255655
				Rata-rata ± SD =	101.60 ± 0.82
				KV =	0.806223272

Hasil Uji Keseragaman Kandungan Tablet Formula C replikasi I

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0.623	9.1267606	303.5	9.105	100.2389958
2	0.627	9.1830986	306.7	9.201	99.80544062
3	0.635	9.2957746	303.9	9.117	101.9608934
4	0.639	9.3521127	300.3	9.009	103.8085545
5	0.624	9.1408451	301.8	9.054	100.9591901
6	0.642	9.3943662	308.2	9.246	101.6046528
7	0.631	9.2394366	304.1	9.123	101.2762975
8	0.628	9.1971831	307.4	9.222	99.73089458
9	0.633	9.2676056	305.7	9.171	101.0533817
10	0.625	9.1549296	301.6	9.048	101.1818035
				Rata-rata ± SD =	101.16 ± 1.19
				KV =	1.171714406

Hasil Uji Keseragaman Kandungan Tablet Formula C replikasi II

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0.631	9.2394366	303.5	9.105	101.4765142
2	0.637	9.3239437	305.3	9.159	101.8008916
3	0.632	9.2535211	300.7	9.021	102.5775538
4	0.638	9.3380282	301.8	9.054	103.1370463
5	0.624	9.1408451	304.4	9.132	100.096858
6	0.629	9.2112676	305.6	9.168	100.4719416
7	0.622	9.1126761	303.1	9.093	100.2163869
8	0.634	9.2816901	307.7	9.231	100.5491295
9	0.625	9.1549296	308.5	9.255	98.91874206
10	0.628	9.1971831	307.4	9.222	99.73089458
				Rata-rata ± SD =	100.90 ± 1.32
				KV =	1.307914124

Hasil Uji Keseragaman Kandungan Tablet Formula C replikasi III

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C Teoritis	Kadar (%)
1	0.632	9.2535211	306.2	9.186	100.7350438
2	0.626	9.1690141	303.8	9.114	100.6036217
3	0.634	9.2816901	307.8	9.234	100.5164624
4	0.621	9.0985915	306.5	9.195	98.95151223
5	0.637	9.3239437	301.6	9.048	103.0497752
6	0.629	9.2112676	308.5	9.255	99.52747278
7	0.619	9.0704225	306.4	9.192	98.67735569
8	0.624	9.1408451	308.2	9.246	98.86269814
9	0.635	9.2957746	305.7	9.171	101.3605348
10	0.641	9.3802817	302.6	9.078	103.3298269
				Rata-rata ± SD =	100.56 ± 1.65
				KV =	1.644875363

Hasil Uji Keseragaman Kandungan Tablet Formula D replikasi I

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C Teoritis	Kadar (%)
1	0.636	9.3098592	302.5	9.075	102.5879797
2	0.625	9.1549296	305.1	9.153	100.0210814
3	0.637	9.3239437	306.8	9.204	101.3031689
4	0.622	9.1126761	307.2	9.216	98.87886346
5	0.631	9.2394366	308.5	9.255	99.83183814
6	0.629	9.2112676	304.5	9.135	100.8348944
7	0.638	9.3380282	306.4	9.192	101.5886441
8	0.627	9.1830986	301.9	9.057	101.3922777
9	0.642	9.3943662	306.2	9.186	102.2683017
10	0.639	9.3521127	304.3	9.129	102.4439991
				Rata-rata ± SD=	101.12 ± 1.23
				KV =	1.212340009

Hasil Uji Keseragaman Kandungan Tablet Formula D replikasi II

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C Teoritis	Kadar (%)
1	0.623	9.1267606	302.5	9.075	100.5703643
2	0.634	9.2816901	305.7	9.171	101.2069582
3	0.627	9.1830986	307.3	9.219	99.61057155
4	0.636	9.3098592	301.8	9.054	102.825924
5	0.628	9.1971831	303.6	9.108	100.9791732
6	0.631	9.2394366	307.4	9.222	100.1890763
7	0.622	9.1126761	308.2	9.246	98.55803652
8	0.635	9.2957746	306.5	9.195	101.0959722
9	0.625	9.1549296	304.9	9.147	100.0866905
10	0.632	9.2535211	305.4	9.162	100.9989208
				Rata – rata ± SD =	100.61 ± 1.13
				KV =	1.121181019

Hasil Uji Keseragaman Kandungan Tablet Formula D replikasi III

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0.635	9.2957746	301.5	9.045	102.7725224
2	0.627	9.1830986	305.7	9.171	100.1319223
3	0.631	9.2394366	308.3	9.249	99.89660093
4	0.625	9.1549296	304.5	9.135	100.2181672
5	0.638	9.3380282	306.4	9.192	101.5886441
6	0.623	9.1267606	308.2	9.246	98.71036733
7	0.641	9.3802817	303.1	9.093	103.1593719
8	0.633	9.2676056	302.8	9.084	102.0211981
9	0.621	9.0985915	307.2	9.216	98.72603678
10	0.643	9.4084507	302.3	9.069	103.7429783
				Rata-rata ± SD =	101.10 ± 1.8
				KV =	1.79445983

Semua formula di atas memenuhi persyaratan keseragaman kandungan dimana jumlah zat aktif terletak antara 90-110% dan simpangan baku relatif kurang dari 6,0% (Anonim, 1995)

LAMPIRAN I

HASIL UJI DISOLUSI TABLET LEPAS LAMBAT KAPTOPRIL

Hasil Uji Disolusi Tablet Lepas Lambat Kaptopril Formula A

Replikasi	t (menit)	Absorbansi	C sampel (µg/ml)	Wt (mg)	AUC (mg.menit)
	30	0.265	4.08	9.18	137.70
	60	0.281	4.31	9.70	283.20
	90	0.312	4.75	10.69	305.85
	120	0.323	4.90	11.03	325.80
I	180	0.346	5.23	11.77	684.00
	240	0.352	5.31	11.95	711.60
	300	0.368	5.54	12.47	732.60
	360	0.375	5.63	12.67	754.20
				Σ =	3934.95
	30	0.267	4.11	9.25	138.75
	60	0.279	4.28	9.63	283.20
	90	0.283	4.34	9.77	291.00
	120	0.297	4.54	10.22	299.85
II	180	0.298	4.55	10.24	613.80
	240	0.358	5.39	12.13	671.10
	300	0.361	5.44	12.24	731.10
	360	0.374	5.62	12.65	746.70
				Σ =	3775.50
	30	0.269	4.14	9.32	139.80
	60	0.281	4.31	9.70	285.30
	90	0.293	4.48	10.08	296.70
	120	0.315	4.79	10.78	312.90
III	180	0.338	5.11	11.50	668.40
	240	0.357	5.38	12.11	708.30
	300	0.362	5.45	12.26	731.10
	360	0.376	5.65	12.71	749.10
				Σ =	3891.60

Keterangan: Abs = absorbansi sampel, C sampel = konsentrasi sampel,
Wt = jumlah kaptopril yang terlarut.

Hasil Uji Disolusi Tablet Lepas Lambat Kaptopril Formula B

Replikasi	t (menit)	Absorbansi	C sampel (µg/ml)	Wt (mg)	AUC (mg.menit)
I	30	0.309	4.70	10.58	158.70
	60	0.315	4.79	10.78	320.40
	90	0.332	5.03	11.32	331.50
	120	0.359	5.41	12.17	352.35
	180	0.374	5.62	12.66	744.75
	240	0.395	5.92	13.32	779.25
	300	0.401	6.00	13.50	804.60
	360	0.412	6.15	13.84	820.20
				Σ =	4311.75
II	30	0.308	4.69	10.55	158.25
	60	0.313	4.76	10.71	318.90
	90	0.338	5.11	11.50	333.15
	120	0.352	5.31	11.95	351.75
	180	0.379	5.69	12.80	742.50
	240	0.391	5.86	13.19	779.70
	300	0.407	6.08	13.68	806.10
	360	0.409	6.11	13.75	822.90
				Σ =	4313.25
III	30	0.311	4.73	10.64	159.60
	60	0.327	4.96	11.16	327.00
	90	0.339	5.13	11.55	340.65
	120	0.356	5.37	12.08	354.45
	180	0.375	5.63	12.67	742.50
	240	0.394	5.90	13.28	778.50
	300	0.405	6.06	13.64	807.60
	360	0.411	6.14	13.82	823.80
				Σ =	4334.10

Keterangan: Abs = absorbansi sampel, C sampel = konsentrasi sampel, Wt = jumlah kaptopril yang terlarut.

Hasil Uji Disolusi Tablet Lepas Lambat Kaptopril Formula C

Replikasi	t (menit)	Absorbansi	C sampel (µg/ml)	Wt (mg)	AUC (mg.menit)
I	30	0.411	6.135	13.82	207.30
	60	0.423	6.310	14.18	420.00
	90	0.439	6.535	14.72	433.50
	120	0.451	6.704	15.08	447.00
	180	0.462	6.859	15.44	915.60
	240	0.485	7.183	16.16	948.00
	300	0.504	7.451	16.76	987.60
	360	0.512	7.563	17.01	1013.10
				Σ =	5372.10
II	30	0.415	6.197	13.95	209.25
	60	0.426	6.352	14.29	423.60
	90	0.437	6.507	14.65	434.10
	120	0.452	6.718	15.12	446.55
	180	0.464	6.887	15.50	918.60
	240	0.483	7.155	16.11	948.30
	300	0.507	7.493	16.85	988.80
	360	0.511	7.549	16.99	1015.20
				Σ =	5384.40
III	30	0.413	6.169	13.88	208.20
	60	0.425	6.338	14.27	422.25
	90	0.434	6.465	14.56	432.45
	120	0.455	6.761	15.21	446.55
	180	0.461	6.845	15.41	918.60
	240	0.487	7.211	16.22	948.90
	300	0.506	7.479	16.83	991.50
	360	0.513	7.577	17.06	1016.70
				Σ =	5385.15

Keterangan: Abs = absorbansi sampel, C sampel = konsentrasi sampel, Wt = jumlah kaptopril yang terlarut.

Hasil Uji Disolusi Tablet Lepas Lambat Kaptopril Formula D

Replikasi	t (menit)	Absorbansi	C sampel (µg/ml)	Wt (mg)	AUC (mg.menit)
I	30	0.548	8.070	18.16	272.40
	60	0.553	8.141	18.32	547.20
	90	0.561	8.254	18.56	553.20
	120	0.576	8.465	19.06	564.30
	180	0.584	8.577	19.31	1151.10
	240	0.602	8.831	19.87	1175.40
	300	0.623	9.127	20.54	1212.30
	360	0.648	9.479	21.33	1256.10
				Σ =	6732.00
II	30	0.551	8.113	18.25	273.75
	60	0.563	8.282	18.63	553.20
	90	0.578	8.493	19.10	565.95
	120	0.585	8.592	19.33	576.45
	180	0.604	8.859	19.94	1178.10
	240	0.616	9.028	20.32	1207.80
	300	0.632	9.254	20.81	1233.90
	360	0.649	9.493	21.35	1264.80
				Σ =	6853.95
III	30	0.546	8.042	18.09	271.35
	60	0.559	8.225	18.52	549.15
	90	0.563	8.282	18.63	557.25
	120	0.575	8.451	19.01	564.60
	180	0.581	8.535	19.22	1146.90
	240	0.607	8.901	20.03	1177.50
	300	0.625	9.155	20.61	1219.20
	360	0.647	9.465	21.31	1257.60
				Σ =	6743.55

Keterangan: Abs = absorbansi sampel, C sampel = konsentrasi sampel, Wt = jumlah kaptopril yang terlarut.

LAMPIRAN J

CONTOH PERHITUNGAN

Contoh perhitungan sudut diam:

Formula A:

W persegi panjang = 3,83 gram

W lingkaran = 0,75 gram

Luas persegi panjang = 29,6 x 22,4

= 663,04 cm^2

Luas lingkaran $= \frac{0,75}{3,83} \times 663,04$ = 129,84 cm^2

A $= \pi.r^2$

r^2 $= \frac{A}{\pi}$

$= \frac{129,84}{3,14} = 41,35$

r = 6,43 cm

tg α $= \frac{t}{r} = \frac{3,27}{6,43} = 0,5086$

α = 26,96°

Contoh perhitungan indeks kompresibilitas:

Formula A :

Berat gelas = 129,58 g (W_1)

Berat gelas + granul = 182,13 g (W_2)

V_1 = 100 ml

V_2 = 80 ml

Bj nyata = $\frac{(W_2 - W_1)}{V_1} = \frac{(182{,}13 - 129{,}58)}{100} = 0{,}5255$

Bj mampat = $\frac{(W_2 - W_1)}{V_2} = \frac{(182{,}13 - 129{,}58)}{80} = 0{,}6569$

% kompresibilitas = $\left(1 - \frac{\text{Bj.nyata}}{\text{Bj.mampat}}\right) x\,100\% = 20{,}003\%$

Contoh perhitungan akurasi & presisi:

%	Bahan aktif (mg)	Matriks (mg)	+Larutan HCl pH 1,0 ad	Pipet (ml)	+Larutan HCl pH 1,0 ad	Konsentrasi (ppm)
100	50	250	100	0,18	10	9

Absorbansi = 0,546 → y = 0,0671 – 0,0771

Konsentrasi sebenarnya = 9,420 ppm

Konsentrasi teoritis = 9,144 ppm

% perolehan kembali = (konsentrasi sebenarnya / konsentrasi teoritis) x 100%

= (9,420 / 9,144) x 100%

= 103,02 %

Untuk menghitung % KV = $\frac{SD}{\overline{X}} x\,100\%$

= $\frac{0{,}415}{101{,}04} x100\%$

= 0,409 %

Contoh perhitungan W_t:

W_t = Csesungguhnya x 5

Formula A replikasi 1 pada t = 30 menit

W_t = 3,34 x 5 = 16,70 mg

Contoh perhitungan % obat terlepas:

% obat terlepas = $\frac{Wt}{PK} \times 100\%$

Formula A replikasi 1 pada t = 30 menit

% obat terlepas = $\frac{16,70\ \text{mg}}{50,95 mg} \times 100\% = 32,78\%$

Contoh perhitungan AUC pada disolusi:

Rumus: $\frac{Wt_n + W\,t_{n-1}}{2} \times t_n - t_{n-1}$

Formula A *batch* 1

Wt_{n-1} = 16,70

Wt_n = 16,92

t_n = 60 menit

t_{n-1} = 30 menit

AUC = $\frac{16,92 + 16,70}{2} x(60 - 30)$

= 504,32

% ED Formula A *batch* 1 = (∑ AUC / luas □) x 100%

= (7610,99/18342) x 100%

= 41,49 %

Perhitungan persamaan orde nol:

Rumus: $C_t = C_0 - k \cdot t$

Dari persamaan regresi C_t *versus* t (waktu), maka didapatkan suatu persamaan regresi dan nilai r, *slope* serta *intersept*. Nilai k_{diss} adalah *slope*.

Perhitungan persamaan orde satu:

Rumus: $\ln (\overline{X} - C_t) = \ln C_0 - k \cdot t$

Dari persamaan regresi $\ln (\overline{X} - C_t)$ *versus* t (waktu), maka didapatkan suatu persamaan regresi dan nilai r, *slope* serta *intersept*. Nilai k_{diss} adalah *–slope*.

$\overline{X}$ adalah rata-rata penetapan kadar.

Perhitungan persamaan Higuchi:

Rumus: $C_t = C_0 + k \cdot t^{1/2}$

Dari persamaan regresi C_t *versus* $\sqrt{t}$ (waktu), maka didapatkan suatu persamaan regresi dan nilai r, *slope* serta *intersept*.

LAMPIRAN K

SERTIFIKAT ANALISIS BAHAN

Kaptopril :

kunze/indopharm

ANNO 1932

Kunze Indopharm bv
Pharmaceutical and Veterinary Products
Koningin Emmakade 171
2518 JN Den Haag
Holland
Telephone : 31-70-3247602
Fax : 31-70-3240318
e-mail / website:
office@kunze-indopharm.com
www.kunze-indopharm.com
Bankers:
ING Bank : 66.80.02.166
Postbank : 31.05.220
Chamber of Commerce
Den Haag no. 27132584
BTW/Vat no. 007946089 B01

P.T. Coronet Crown
Jl. Raya Taman Km 15
Taman Sidoarjo 61257
Indonesia

Date 05.03.2009 Your ref. PO.00136/BB/09

CERTIFICATE OF ANALYSIS

Product:	Captopril
Batch No. :	CQ0201
Date of mfgr:	08/01/2009
Date of expiry:	08/01/2012
Quantity:	10.0 kg
Package:	10.0 kg/drum

Tests	Specifications	Results
Characteristic	A white or almost white crystalline powder, free soluble in water, in methanol, in alcohol and in chloroform (96%)	Conform
Identification	Infrared absorption (197 K)	Positive
Melting range	104.0 ~ 110.0℃	107.0~ 108.0℃
Specific rotation	-125.0 ~ - 134.0°	-132.0°
Loss on drying	NMT 0.5 %	0.03 %
Residue on ignition	NMT 0.2 %	0.03 %
Heavy metals	NMT 30 ppm	< 30 ppm
Related substances		
Captopril disulfide	NMT 1.0 %	0.3 %
Single unknown impurity	NMT 0.2 %	Not detected
Total unknown impurities	NMT 0.5 %	Not detected
O.V.I.	As per USP31	Conform
Residual solvents	LOD NMT 0.5 %	0.03 %
Assay (on dried basis)	97.5 ~ 102.0 %	99.4 %

Conclusion: This batch of product complies with USP31.

ANNO 1932 kunze
Pharmaceutical and Veterinary raw materials
Food and Feed ingredients

杭州南杭化工有限公司
NANHANG INDUSTRIAL CO.,LTD
地址:中国杭州市西湖区周浦乡姚家坞

CERTIFICATE OF ANALYSIS

Product	PVP K-30 USP/BP		
Batch No.	20051213	Quantity	2025KGS
Manufacture Date	DEC.,2005	Expiry Date	DEC.,2008

ITEMS	SPECIFICATIONS	TEST RESULTS
Characteristics	A white, fine powder	Complies
Identification	Positive	Positive
Water	5% max	2.8%
Residue on ignition	0.1% max	0.02%
K-Value	27-32	30.7
Heavy metals(Lead)	10ppm max	Complies
Nitrogen	11.5%-12.8%	12.2%
Vinylpyrrolidone	0.2% max	0.032%
Aldehydes	0.05% max	Complies
Ph Value	3.0-7.0	3.62
Hydrazine	1ppm max	Complies
Peroxides	400ppm max	Complies
Microbial Limits(By annual verification test)	Salmonalla	Negative
	Coli	Negative
	Coliforms <1CFU/gm	Conform
	Standard Plate Count<10,000CFU/gm	Conform
	Mold & Yeast <1,000 CFU/gm	Conform

Conclusion: IT CONFORMS USP/BP

Analyst: Wang liu ling Checker: li ling Head of Q.C Dept: Wang xiao fang

megAsetia
PT. MEGASETIA AGUNG KIMIA

Talkum :

SUN PLAN DEVELOPMENT LTD.

CERTIFICATE OF ANALYSIS

INVOICE NO. 1514

TO: PT BRATACO JL. KELENTENG NO. 8
BANDUNG QQ PT BRATACO JL. MANGGA
BESAR V/5 JAKARTA, INDONESIA
NPWP.01.130.689.1-032.001

RE: 48 MT TALC POWDER HAICHEN SHIPPED PER V.SL "HUANDAO " V.3192 FROM BAYUQUAN, CHINA SEAPORT TO TG.PRIOK PORT, JAKARTA, INDONESIA ON/ABOUT 18 OCT 2003 DRAWN UNDER IRREVOCABLE DC NO.02/03U/0645 DD 19SEPT03 OF BANK NISP PT (SWIFT ADDRESS : NISPIDJA)

COMMODITY : TALC POWDER HAICHEN
QUANTITY : 48 MT

SiO2 :	60.1%
MgO :	30.8%
WHITENESS :	92.8%
CaO :	0.4%
:O3 :	0.26%
Al2O3 :	0.3%
LOI :	6.0%
FINENESS :	98.5% PASSING THROUGH 325 MESH
PH :	7-9
MOISTURE :	0.38%
ASBESTOS :	FREE

BRATACO
IMPORTER
MANUFACTURER
DISTRIBUTOR

For and on behalf of
SUN PLAN DEVELOPMENT LIMITED
IMPORTER
MANUFACTURER
DISTRIBUTOR

Magnesium stearat:

SUN PLAN DEVELOPMENT LTD.

CERTIFICATE OF ANALYSIS

INVOICE NO. 1514

TO: PT BRATACO JL. KELENTENG NO. 8
BANDUNG QQ PT BRATACO JL. MANGGA
BESAR V/5 JAKARTA, INDONESIA
NPWP.01.130.689.1-032.001

RE: 48 MT TALC POWDER HAICHEN SHIPPED PER V.SL "HUANDAO " V.3192 FROM BAYUQUAN, CHINA SEAPORT TO TG.PRIOK PORT, JAKARTA, INDONESIA ON/ABOUT 18 OCT 2003
DRAWN UNDER IRREVOCABLE DC NO.03/03U/0645 DD 19SEPT03 OF BANK NISP PT (SWIFT ADDRESS : NISPIDJA)

COMMODITY : TALC POWDER HAICHEN
QUANTITY : 48 MT

SiO2 :	60.1%
MgO :	30.8%
WHITENESS :	92.8%
CaO :	0.4%
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LOI :	6.0%
FINENESS :	98.5% PASSING THROUGH 325 MESH
PH :	7-9
MOISTURE :	0.38%
ASBESTOS :	FREE

BRATACO
IMPORTER
MANUFACTURER
DISTRIBUTOR

for and on behalf of
SUN PLAN DEVELOPMENT LIMITED
IMPORTER
MANUFACTURER
DISTRIBUTOR

Kalsium sulfat :

SIGMA-ALDRICH

Certificate of Analysis

Product Name	Calcium sulfate dihydrate, puriss. p.a., ACS reagent, ≥99%
Product Number	31221
Product Brand	Riedel-de Haën
CAS Number	10101-41-4
Molecular Formula	$CaSO_4 \cdot 2H_2O$
Molecular Weight	172.17

TEST	LOT 31870 RESULTS
	Reag. ACS
assay	102.0 %
insoluble in HCl	< 0.02 %
iron (Fe)	< 0.001 %
potassium (K)	< 0.005 %
magnesium (Mg)	< 0.02 %
sodium (Na)	< 0.02 %
strontium (Sr)	< 0.05 %
heavy metals (as Pb)	< 0.002 %
carbonate (CO3)	complying
chloride (Cl)	< 0.005 %
nitrate (NO3)	complying
	Identity, assay and impurities are complying to the monographs of the above mentioned pharmacopeias/codices.
QC-Releasedate	08.Jul.03
rec. Retest Date	18.Dec.06

Andreas Tomczak, Manager
Quality Control
Seelze, Germany

$FeCl_3$:

MERCK

Certificate of Analysis

http://certificates.merck.de

Date of print: 12.04.2010

1.03943.0250 Iron(III) chloride hexahydrate GR for analysis ACS,Reag. Ph Eur

Batch B0444943

	Spec. Values		Batch Values	
Assay (iodometric, $FeCl_3$-$6H_2O$)	99.0 - 102.0	%	99.6	%
Identity	passes test		passes test	
Insoluble matter	≤ 0.01	%	≤ 0.01	%
Free chlorine	passes test		passes test	
Acidic substances	passes test		passes test	
Nitrate (NO_3)	≤ 0.01	%	≤ 0.01	%
Sulphate (SO_4)	≤ 0.01	%	≤ 0.01	%
Total nitrogen (N)	≤ 0.001	%	≤ 0.001	%
Total phosphorus (as PO_4)	≤ 0.01	%	≤ 0.01	%
Heavy metals (as Pb)	≤ 0.005	%	≤ 0.005	%
Ca (Calcium)	≤ 0.01	%	≤ 0.01	%
Cu (Copper)	≤ 0.003	%	≤ 0.003	%
Fe II (Iron II)*	≤ 0.002	%	≤ 0.002	%
K (Potassium)	≤ 0.005	%	≤ 0.005	%
Mg (Magnesium)	≤ 0.005	%	≤ 0.005	%
Na (Sodium)	≤ 0.05	%	≤ 0.05	%
Zn (Zinc)	≤ 0.003	%	≤ 0.003	%

** The Fe(II)-content increases if the recommended storage conditions (+15 to +25 °C) are not observed.*

Certificate of Analysis

1.03943.0250	Iron(III) chloride hexahydrate GR for analysis ACS,Reag. Ph Eur
Batch	B0444943

Test date (DD.MM.YYYY): *16.10.2009*
Minimum shelf life (DD.MM.YYYY): *31.10.2012*

Dr. Andreas Lang

responsible laboratory manager quality control

This document has been produced electronically and is valid without a signature

LAMPIRAN L

TABEL F

Tabel Distribusi F

Denomins for Degrees of Freedom	Numerator Degrees of Freedom								
	1	2	3	4	5	6	7	8	9
1	161.4	199.5	215.7	224.6	230.2	234.0	236.8	238.9	240.5
2	18.81	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38
3	10.73	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30.
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04
120	3.92	3.07	2.68	2.45	2.29	2.17	2.09	2.02	1.96
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88

(Sumber: John E., 1992)

LAMPIRAN M

TABEL UJI r

DEGREES OF FREEDOM (DF)	5 PERCENT	1 PERCENT	DEGREES OF FREEDOM (DF)	5 PERCENT	1 PERCENT
1	.997	1.000	24	.388	.496
2	.950	.990	25	.381	.487
3	.878	.959	26	.374	.478
4	.811	.917	27	.367	.470
5	.754	.874	28	.361	.463
6	.707	.834	29	.355	.456
7	.666	.798	30	.349	.449
8	.632	.765	35	.325	.418
9	.602	.735	40	.304	.393
10	.576	.708	48	.288	.372
11	.553	.684	50	.273	.354
12	.532	.661	60	.250	.325
13	.514	.641	70	.232	.302
14	.497	.623	80	.217	.283
15	.482	.606	90	.205	.267
16	.468	.590	100	.195	.254
17	.456	.575	125	.174	.228
18	.444	.561	150	.159	.208
19	.433	.549	200	.138	.181
20	.423	.537	300	.113	.148
21	.413	.526	400	.098	.128
22	.404	.515	500	.088	.115
23	.396	.505	1000	.062	.081

Dikutip dari: Soedigdo & Soedigdo (1977)

LAMPIRAN N

TABEL UJI HSD (0,05)

d.k. \ k	2	3	4	5	6	7	8	9	10	11
5	3.64	4.60	5.22	5.67	6.03	6.33	6.58	6.80	6.99	7.17
6	3.46	4.34	4.90	5.30	5.63	5.90	6.12	6.32	6.49	6.65
7	3.34	4.16	4.68	5.06	5.36	5.61	5.82	6.00	6.16	6.30
8	3.26	4.04	4.53	4.89	5.17	5.40	5.60	5.77	5.92	6.05
9	3.20	3.95	4.41	4.76	5.02	5.24	5.43	5.59	5.74	5.87
10	3.15	3.88	4.33	4.65	4.91	5.12	5.30	5.46	5.60	5.72
11	3.11	3.82	4.26	4.57	4.82	5.03	5.20	5.35	5.49	5.61
12	3.08	3.77	4.20	4.51	4.75	4.95	5.12	5.27	5.39	5.51
13	3.06	3.73	4.15	4.45	4.69	4.88	5.05	5.19	5.32	5.43
14	3.03	3.70	4.11	4.41	4.64	4.83	4.99	5.13	5.25	5.36
15	3.01	3.67	4.08	4.37	4.59	4.78	4.94	5.08	5.20	5.31
16	3.00	3.65	4.05	4.33	4.56	4.74	4.90	5.03	5.15	5.26
17	2.98	3.63	4.02	4.30	4.52	4.71	4.86	4 99	5.11	5.21
18	2.97	3.61	4.00	4.28	4.49	4.67	4.82	4.96	5.07	5.17
19	2.96	3.59	3.98	4.25	4.47	4.65	4.79	4.92	5.04	5.14
20	2.95	3.58	3.96	4.23	4.45	4.62	4.77	4.90	5.01	5.11
24	2.92	3.53	3.90	4.17	4.37	4.54	4.68	4.81	4.92	5.01
30	2.89	3.49	3.85	4.10	4.30	4.46	4.60	4.72	4.82	4.92
40	2.86	3.44	3.79	4.04	4.23	4.39	4.52	4.63	4.73	4.82
60	2.83	3.40	3.74	3.98	4.16	4.31	4.44	4.55	4.65	4.73
120	2.80	3.36	3.68	3.92	4.10	4.24	4.36	4.47	4.56	4.64
∞	2.77	3.31	3.63	3.86	4.03	4.17	4.29	4.39	4.47	4.55

Catatan kaki: Dari *Annals of mathematical statistics.* Diulang cetak seizin penerbit, The Institute of Mathematical Statistics.

Sumber: Schefler (1987).

LAMPIRAN O

HASIL UJI STATISTIK KEKERASAN TABLET ANTAR FORMULA

Anova: *Single Factor*

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Column 1	3	46.469	15.48967	0.001001
Column 2	3	35.813	11.93767	0.022805
Column 3	3	50.641	16.88033	0.05588
Column 4	3	42.026	14.00867	0.00626

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	40.28211	3	13.42737	624.9116	8.01E-10	4.066181
Within Groups	0.171895	8	0.021487			
Total	40.45401	11				

Keterangan: F_{hitung} = 624,9116 > $F_{0,05}$= 3,59 sehingga H ditolak dan ada perbedaan yang bermagna antar formula.

Hasil Uji HSD Kekerasan Tablet

HSD = 0,296099

Perlakuan	**Mean**	**FA 11.93767**		**FB 16.88033**		**FC 14.00867**		**FD 0**	
FA	11.93767	0		4.942667	*	2.071	*	-11.9377	*
FB	16.88033			0		-2.87167	*	-16.8803	
FC	14.00867					0		-14.0087	*
FD	0							0	

Keterangan:
Nilai HSD = 0,296099
* = Perbedaannya signifikan, karena selisihnya > nilai HSD
TS = Perbedaannya tidak signifikan, karena selisihnya < nilai HSD

LAMPIRAN P

HASIL UJI STATISTIK KERAPUHAN TABLET ANTAR FORMULA

Anova: *Single Factor*

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Column 1	3	0.488391877	0.162797292	4.72553E-06
Column 2	3	1.457889315	0.485963105	1.4437E-06
Column 3	3	0.977210768	0.325736923	1.96192E-06
Column 4	3	1.465852609	0.488617536	1.33617E-05

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.2170154	3	0.072338467	13462.81447	3.7849E-15	4.066180557
Within Groups	4.29856E-05	8	5.37321E-06			
Total	0.217058386	11				

Keterangan: F_{hitung} = 13462,81447 > $F_{0,05}$ = 3,59 sehingga H ditolak dan ada perbedaan bermagna antar formula.

Hasil Uji HSD Kerapuhan Talet

HSD = 0.004682395

Perlakuan	Mean	FA 0.162797292		FB 0.485963105		FC 0.325736923		FD 0.488617536	
FA	0.162797292	0		0.323165813	*	0.162939631		0.325820244	*
FB	0.485963105			0		-0.160226182	*	0.002654431	TS
FC	0.325736923					0		0.162880613	*
FD	0.488617536							0	

Keterangan:
Nilai HSD = 0,004682395
* = Perbedaannya signifikan, karena selisihnya > nilai HSD
TS = Perbedaannya tidak signifikan, karena selisihnya < nilai HSD

LAMPIRAN Q

HASIL UJI STATISTIK PENETAPAN KADAR TABLET ANTAR FORMULA

Anova: *Single Factor*

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Column 1	3	306.6486	102.2162	1.130031
Column 2	3	305.3216	101.7739	0.273653
Column 3	3	305.5353	101.8451	0.991361
Column 4	3	305.5956	101.8652	2.605796

ANOVA

Source of variation	*ss*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.352799	3	0.1176	0.094064	0.961197	4.066181
Within Groups	10.00168	8	1.25021			
Total	0,35448	11				

Keterangan: F_{hitung} = 0,094064 < $F_{0,05}$ = 3,59 sehingga H diterima dan tidak ada perbedaan yang bermagna antar formula.

LAMPIRAN R

UJI F KURVA BAKU PENETAPAN KADAR

REPLIKASI 1

Konsentrasi	Absorbansi	X^2	Y^2	XY
3.096	0.375	9.5852	0.1406	1.1610
5.16	0.475	26.6256	0.2256	2.4510
7.224	0.589	52.1862	0.3469	4.2549
9.288	0.679	86.2669	0.4610	6.3066
11.352	0.756	128.8679	0.5715	8.5821
13.416	0.879	179.9891	0.7726	11.7927
15.480	0.904	239.6304	0.8172	13.9939
		□□□□1□1□	□□□□□	□□□□□□

REPLIKASI 2

Konsentrasi	Absorbansi	X^2	Y^2	XY
3.048	0.389	9.2903	0.1513	1.1857
5.080	0.491	25.8064	0.2411	2.4943
7.112	0.597	50.5805	0.3564	4.2459
9.144	0.695	83.6127	0.4830	6.3551
11.176	0.775	124.9030	0.6006	8.6614
13.208	0.894	174.4513	0.7992	11.8080
15.240	0.915	232.2576	0.8372	13.9446
		□□1□	□□□□□	□□□□□□

REPLIKASI 3

Konsentrasi	Absorbansi	X^2	Y^2	XY
3.072	0.369	9.4372	0.1362	1.1336
5.12	0.482	26.2144	0.2323	2.4678
7.168	0.572	51.3802	0.3272	4.1001
9.216	0.684	84.9347	0.4679	6.3037
11.264	0.763	126.8777	0.5822	8.5944
13.312	0.882	177.2093	0.7779	11.7412
15.360	0.908	235.9296	0.8245	13.9469
		□11□□□1	□□□□1	□□□□□□

	S X^2	SXY	S Y^2	N	SSi	RDF
Regresi I	723.1513	48.5422	3.3356	7	3.2685	6
Regresi II	700.9018	48.6948	3.4689	7	3.3994	6
Regresi III	711.9831	48.2877	3.3481	7	3.2803	6
	2136.0362	145.5248	10.1526		9.9482	
Ssc = 10,0845						
F = 0.082202025 < F tabel =3,59						

LAMPIRAN S

HASIL UJI STATISTIK DISOLUSI TABLET ANTAR FORMULA

Anova: *Single Factor*

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Column 1	8	386.46	48.3075	31.15048
Column 2	8	430.63	53.82875	29.43044
Column 3	8	535.52	66.94	25.60991
Column 4	8	682.63	85.32875	23.12093

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	6501.056	3	2167.019	79.29682	8.49E-14	2.946685
Within Groups	765.1823	28	27.32794			
Total	7266.239	31				

Keterangan: F_{hitung} = 79,29682 > $F_{0,05}$ = 2,92 sehingga H ditolak dan ada perbedaan yang bermagna antar formula

Hasil Uji HSD Disolusi Tablet

Perlakuan	**Mean**	**FA 48.3075**	**FB 53.82875**	**FC 66.94**	**FD 85.32875**
FA	48.3075	0	5.52125	18.6325	37.02125
FB	53.82875		0	13.11125	31.5
FC	66.94			0	18.38875
FD	85.32875				0

Keterangan:
Nilai HSD = 10,55978
* = Perbedaannya signifikan, karena selisihnya > nilai HSD
TS = Perbedaannya tidak signifikan, karena selisihnya < nilai HSD

LAMPIRAN T

HASIL UJI STATISTIK *FLOATING LAG TIME* TABLET ANTAR FORMULA

Anova*: Single Factor*

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Column 1	3	5.35	1.783333	0.000933
Column 2	3	2.35	0.783333	0.003733
Column 3	3	1.78	0.593333	0.000633
Column 4	3	1.12	0.373333	0.000633

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	3.4926	3	1.1642	784.8539	3.23E-10	4.066181
Within Groups	0.011867	8	0.001483			
Total	3.504467	11				

Keterangan: F_{hitung} = 784,8539 > $F_{0,05}$ = 3,59 sehingga H ditolak dan ada perbedaan yang bermagna antar formula

Hasil Uji HSD *Floating Lag Time* Tablet

HSD = 0.077798

Perlakuan	Mean	FA 1.783333	FB 0.783333	FC 0.593333	FD 0.373333
FA	1.783333	0	-1 *	-1.19 *	-1.41
FB	0.783333		0	-0.19 *	-0.41
FC	0.593333			0	-0.22
FD	0.373333				0

Keterangan:
Nilai HSD = 0,077798
* = Perbedaannya signifikan, karena selisihnya > nilai HSD

LAMPIRAN U

HASIL UJI ANAVA KEKERASAN TABLET DENGAN *DESIGN-EXPERT*

Response 1 Kekerasan

ANOVA for selected factorial model

Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Squares	df	Mean Square	F Value
Model	50.18	3	16.73	
A-HPMC K4M-Guar gum	*42.79*	*1*	*42.79*	
B-Asam Tartrat	*6.81*	*1*	*6.81*	
AB0.58	*1*	*0.58*	*38.21*	
Pure Error	0.12	8	0.015	
Cor Total	50.30	11		

The Model F-value of 1100.45 implies the model is significant. There is only a 0.01% chance that a "Model F-Value" this large could occur due to noise.

Values of "Prob > F" less than 0.0500 indicate model terms are significant.
In this case A, B, AB are significant model terms.
Values greater than 0.1000 indicate the model terms are not significant.
If there are many insignificant model terms (not counting those required to support hierarchy),
model reduction may improve your model.

Std. Dev.	0.12	R-Squared	0.9976
Mean12.63		Adj R-Squared	0.9967
C.V. %	0.98	Pred R-Squared	0.9946
PRESS	0.27	Adeq Precision	74.224

The "Pred R-Squared" of 0.9946 is in reasonable agreement with the "Adj R-Squared" of 0.9967.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 74.224 indicates an adequate signal. This model can be used to

navigate the design space.

Factor	Coefficient Estimate	df	Standard Error		95% CI Low	95% CI High
Intercept	12.63	1	0.036		12.55	12.71
A-HPMC K4M-Guar gum	-1.89	1	0.036		-1.97	-1.81
B-Asam Tartrat	-0.75	1	0.036		-0.84	-0.67
AB	0.22	1	0.036		0.14	0.30

Final Equation in Terms of Coded Factors:

Kekerasan =
+12.63
-1.89 * A
-0.75 * B
+0.22 * A * B

Final Equation in Terms of Actual Factors:

Kekerasan =
+12.63167
-1.88833 * HPMC K4M-Guar gum
-0.75333 * Asam Tartrat
+0.22000 * HPMC K4M-Guar gum * Asam Tartrat

The Diagnostics Case Statistics Report has been moved to the Diagnostics Node.
In the Diagnostics Node, Select Case Statistics from the View Menu.

Proceed to Diagnostic Plots (the next icon in progression). Be sure to look at the:
1) Normal probability plot of the studentized residuals to check for normality of residuals.
2) Studentized residuals versus predicted values to check for constant error.
3) Externally Studentized Residuals to look for outliers, i.e., influential values.
4) Box-Cox plot for power transformations.

If all the model statistics and diagnostic plots are OK, finish up with the Model Graphs icon.

LAMPIRAN V

HASIL UJI ANAVA KERAPUHAN TABLET DENGAN *DESIGN-EXPERT*

Response 2 Kerapuhan
ANOVA for selected factorial model
Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Squares	df	Mean Square	F Value	p-value
Model	0.22	3	0.072	13484.21	< 0.0001 significant
A-HPMC K4M-Guar gum	*0.021*	*1*	*0.021*	*3834.24*	*< 0.0001*
B-Asam Tartrat	*0.18*	*1*	*0.18*	*33024.14*	*< 0.0001*
AB	*0.019*	*1*	*0.019*	*3594.24*	*< 0.0001*
Pure Error	4.291E-005	8	5.364E-006		
Cor Total	0.22	11			

The Model F-value of 13484.21 implies the model is significant. There is only
a 0.01% chance that a "Model F-Value" this large could occur due to noise.

Values of "Prob > F" less than 0.0500 indicate model terms are significant.
In this case A, B, AB are significant model terms.
Values greater than 0.1000 indicate the model terms are not significant.
If there are many insignificant model terms (not counting those required to support hierarchy), model reduction may improve your model.

Std. Dev.	2.316E-003	R-Squared	0.9998
Mean	0.37	Adj R-Squared	0.9997
C.V. %	0.63	Pred R-Squared	0.9996
PRESS	9.655E-005	Adeq Precision	243.647

The "Pred R-Squared" of 0.9996 is in reasonable agreement with the "Adj R-Squared" of 0.9997.
"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 243.647 indicates an adequate signal. This model can be used to navigate the design space.

Coefficient Factor	Estimate	Standard Error	df	95% CI Low
Intercept	0.37	6.686E-004	1	0.360.37
A-HPMC K4M-Guar gum	0.041	6.686E-004	1	0.0400.0431.00
B-Asam Tartrat	0.12	6.686E-004	1	0.120.121.00
AB-0.040		16.686E-004		-0.042 -0.0391.00

Final Equation in Terms of Coded Factors:

Kerapuhan =
+0.37
+0.041 * A
+0.12 * B
-0.040 * A * B

Final Equation in Terms of Actual Factors:

Kerapuhan =
+0.36578
+0.041400 * HPMC K4M-Guar gum
+0.12150 * Asam Tartrat
-0.040083 * HPMC K4M-Guar gum * Asam Tartrat

The Diagnostics Case Statistics Report has been moved to the Diagnostics Node.
In the Diagnostics Node, Select Case Statistics from the View Menu.
Proceed to Diagnostic Plots (the next icon in progression). Be sure to look at the:
1) Normal probability plot of the studentized residuals to check for normality of residuals.
2) Studentized residuals versus predicted values to check for constant error.
3) Externally Studentized Residuals to look for outliers, i.e., influential values.
4) Box-Cox plot for power transformations.
If all the model statistics and diagnostic plots are OK, finish up with the Model Graphs icon.

LAMPIRAN W

HASIL UJI ANAVA K DISOLUSI TABLET DENGAN *DESIGN-EXPERT*

Response 3 k disolusi
ANOVA for selected factorial model
Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Squares	df	Mean Square	F Value	p-value Prob > F
Model	5.871E-004	3	1.957E-004	17.74	0.0007 significant
A-HPMC K4M-Guar gum	*4.600E-004*	*1*	*4.600E-004*	*41.71*	*0.0002*
B-Asam Tartrat	*1.015E-004*	*1*	*1.015E-004*	*9.20*	*0.0162*
AB	*2.552E-005*	*1*	*2.552E-005*	*2.31*	*0.1667*
Pure Error	8.823E-005	8	1.103E-005		
Cor Total	6.753E-004	11			

The Model F-value of 17.74 implies the model is significant. There is only a 0.07% chance that a "Model F-Value" this large could occur due to noise. Values of "Prob > F" less than 0.0500 indicate model terms are significant. In this case A, B are significant model terms.
Values greater than 0.1000 indicate the model terms are not significant. If there are many insignificant model terms (not counting those required to support hierarchy), model reduction may improve your model.

Std. Dev.	3.321E-003	R-Squared	0.8693
Mean	0.040	Adj R-Squared	0.8204
C.V. %	8.36	Pred R-Squared	0.7060
PRESS	1.985E-004	Adeq Precision	9.492

The "Pred R-Squared" of 0.7060 is in reasonable agreement with the "Adj R-Squared" of 0.8204.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your
ratio of 9.492 indicates an adequate signal. This model can be used to navigate the design space.

Coefficient Factor	Estimate	df	Standard Error	95% CI Low	95% CI High	VIF
Intercept	0.040	1	9.587E-004	0.037	0.042	
A-HPMC K4M-Guar gum	6.192E-003	1	9.587E-004	3.981E-003	8.402E-003	1.00
B-Asam Tartrat	2.908E-003	1	9.587E-004	6.977E-004	5.119E-003	1.00
AB	1.458E-003	1	9.587E-004	-7.523E-004	3.669E-003	1.00

Final Equation in Terms of Coded Factors:

k disolusi =
+0.040
+6.192E-003 * A
+2.908E-003 * B
+1.458E-003 * A * B

Final Equation in Terms of Actual Factors:

k disolusi =
+0.039708
+6.19167E-003 * HPMC K4M-Guar gum
+2.90833E-003 * Asam Tartrat
+1.45833E-003 * HPMC K4M-Guar gum * Asam Tartrat

The Diagnostics Case Statistics Report has been moved to the Diagnostics Node.In the Diagnostics Node, Select Case Statistics from the View Menu. Proceed to Diagnostic Plots (the next icon in progression). Be sure to look at the:

1) Normal probability plot of the studentized residuals to check for normality of residuals.
2) Studentized residuals versus predicted values to check for constant error.
3) Externally Studentized Residuals to look for outliers, i.e., influential values.
4) Box-Cox plot for power transformations.

If all the model statistics and diagnostic plots are OK, finish up with the Model Graphs icon.

LAMPIRAN X

HASIL UJI ANAVA *FLOATING LAG TIME* TABLET DENGAN *DESIGN-EXPERT*

Response 4 Floating lag time
ANOVA for selected factorial model
Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Squares	df	Mean Square	F Value	p-value Prob > F
Model	3.49	3	1.16	784.85	< 0.0001 significant
A-HPMC K4M-Guar gum	*1.92*	*1*	*1.92*	*1294.38*	*< 0.0001*
B-Asam Tartrat	*1.12*	*1*	*1.12*	*752.56*	*< 0.0001*
AB	*0.46*	*1*	*0.46*	*307.62*	*< 0.0001*
Pure Error	0.012	8	1.483E-003		
Cor Total	3.50	11			

The Model F-value of 784.85 implies the model is significant. There is only a 0.01% chance that a "Model F-Value" this large could occur due to noise.
Values of "Prob > F" less than 0.0500 indicate model terms are significant. In this case A, B, AB are significant model terms.
Values greater than 0.1000 indicate the model terms are not significant.
If there are many insignificant model terms (not counting those required to support hierarchy), model reduction may improve your model.

Std. Dev.	0.039	R-Squared	0.9966
Mean	0.88	Adj R-Squared	0.9953
C.V. %	4.36	Pred R-Squared	0.9924
PRESS	0.027	Adeq Precision	63.410

The "Pred R-Squared" of 0.9924 is in reasonable agreement with the "Adj R-Squared" of 0.9953.
"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 63.410 indicates an adequate signal. This model can be used to navigate the design space.

Coefficient Factor	Estimate	Standard df	Error	95% CI Low	95% CI High	VIF
Intercept	0.88	1	0.011	0.86	0.91	
A-HPMC K4M-Guar gum	-0.40	1	0.011	-0.43	-0.37	1.00
B-Asam Tartrat	-0.31	1	0.011	-0.33	-0.28	1.00
AB	0.20	1	0.011	0.17	0.22	1.00

Final Equation in Terms of Coded Factors:

Floating lag time =
+0.88
-0.40 * A
-0.31 * B
+0.20 * A * B

Final Equation in Terms of Actual Factors:

Floating lag time =
+0.88333
-0.40000 * HPMC K4M-Guar gum
-0.30500 * Asam Tartrat
+0.19500 * HPMC K4M-Guar gum * Asam Tartrat

The Diagnostics Case Statistics Report has been moved to the Diagnostics Node. In the Diagnostics Node, Select Case Statistics from the View Menu.
Proceed to Diagnostic Plots (the next icon in progression). Be sure to look at the:
1) Normal probability plot of the studentized residuals to check for normality of residuals.
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4) Box-Cox plot for power transformations.

If all the model statistics and diagnostic plots are OK, finish up with the Model Graphs icon.