APPENDIX

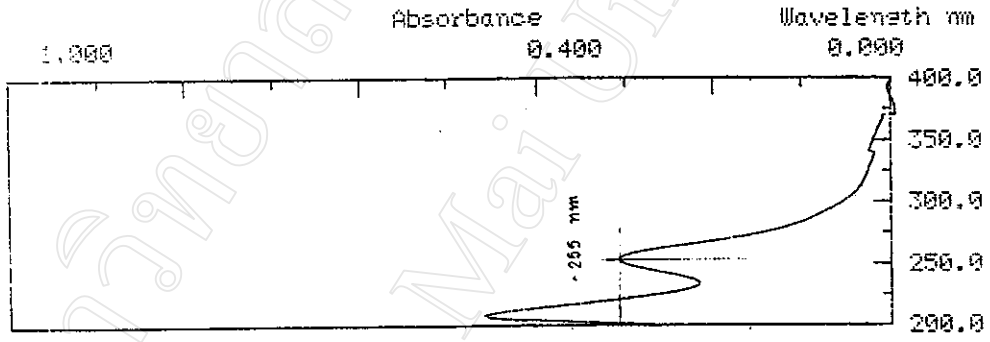

Figure 17 Chromatogram of KP in methanol KP has maximum absorbance at the wavelength 255 nm

Table 23 Precision of UV spectrophotometry analysis of KP in methanol

KP concentration (μg/ml)	Absorbance			
	Intraday		Interday	
	Mean±SD (n=3)	%CV	Mean±SD (n=3)	%CV
1	0.131± 0.003	2.20	0.131±0.013	9.92
2	0.164±0.008	5.12	0.174±0.012	7.00
4	0.327±0.023	7.10	0.327±0.029	8.87
6	0.412±0.028	6.72	0.418±0.029	6.94
8	0.592±0.024	4.00	0.574±0.027	4.68
10	0.722±0.019	2.64	0.728±0.020	2.80
12	0.824±0.031	3.79	0.847±0.027	3.23
14	1.015±0.070	6.92	0.994±0.043	4.30

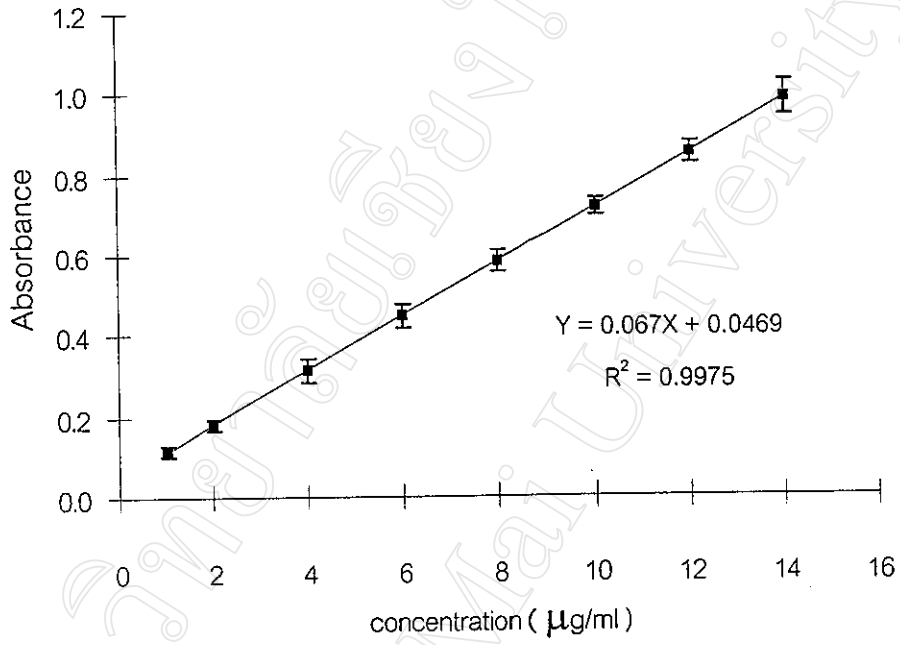

Figure 18 Calibration curve for determination of KP in methanol by UV spectrophotometry at the wavelength 255 nm

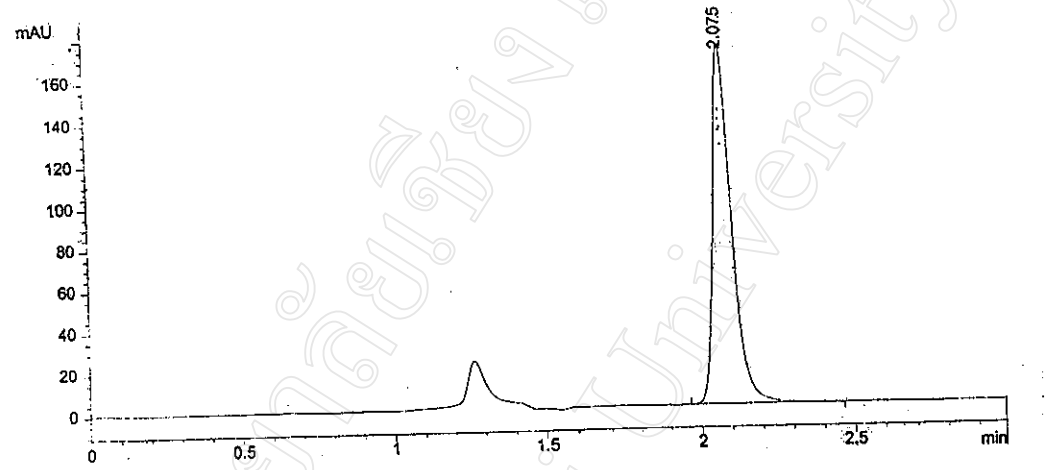

Figure 19 Chromatogram of KP in PBS analyzed using HPLC, KP retention time was about 2.075 min

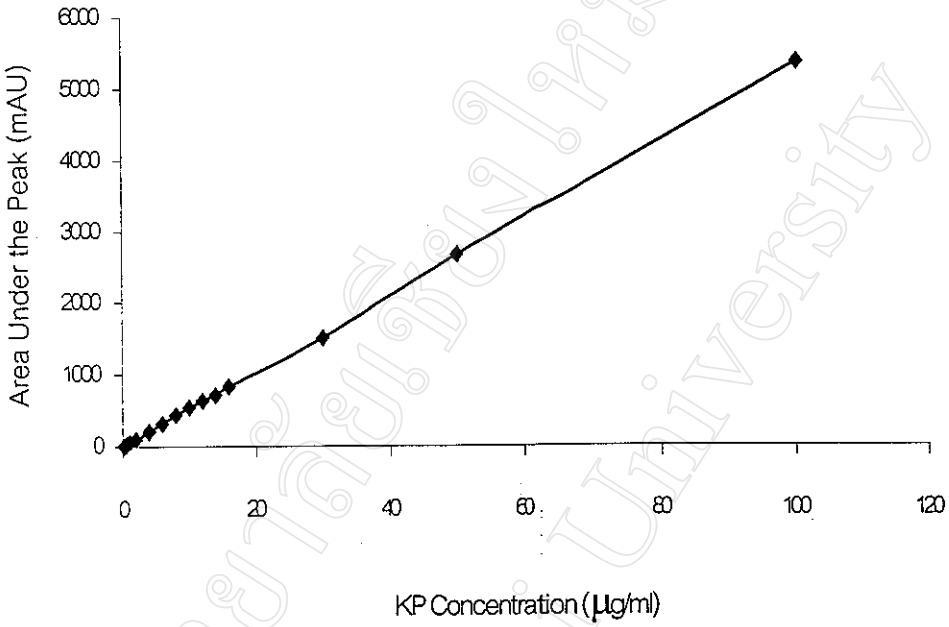

Figure 20 The calibration curve of KP in PBS assay by HPLC Method

Table 24 Area Under the Peak of KP For Calibration Curve of KP in PBS by HPLC Method

KP concentration (µg/ml)	Intraday Area Under Peak (mAU)		Interday Area Under Peak (mAU)	
	Mean± SD	% RSD	Mean± SD	% RSD
0.20	11.54 ± 0.34	2.9	10.66 ± 1.06	9.95
0.50	31.73 ± 2.75	8.67	31.57 ± 2.53	8.00
1.00	59.40 ± 4.96	8.35	57.06 ± 5.57	9.75
2.00	103.00 ± 1.62	1.57	103.78 ± 2.85	2.74
4.00	214.47 ± 5.76	2.69	209.93 ± 5.46	2.60
6.00	329.08 ± 8.52	2.59	318.44 ± 9.14	2.87
8.00	446.84 ± 7.78	1.74	433.13 ± 11.57	2.67
10.00	553.93 ± 2.29	0.41	540.89 ± 10.71	1.98
12.00	652.18 ± 4.22	0.65	636.83 ± 11.98	1.88
14.00	751.01 ± 19.47	2.59	718.17 ± 30.48	4.24
16.00	866.97 ± 13.16	1.52	837.93 ± 24.36	2.91
30.00	1561.08 ± 4.54	0.29	1508.66 ± 41.86	2.77
50.00	2737.35 ± 86.39	3.16	2663.00 ± 82.50	3.10
100.00	5471.93 ± 35.47	0.65	5350.54 ± 121.18	2.26

Table 25 Area under the peak of KP for intraday and interday determination with HPLC method

conc (µg/ml)	Area under the peak (mAu)									mean	SD	%RSD
	Date-1			Date-2			Date-3					
	1	2	3	1	2	3	1	2	3			
0.20	11.93	11.34	11.33	8.73	10.24	10.25	11.13	9.44	11.49	10.66	1.06	9.95
0.50	29.72	30.59	34.87	27.51	28.91	33.00	34.44	32.62	32.49	31.57	2.53	8.00
1.00	64.72	58.55	54.92	48.59	61.19	48.52	57.11	61.32	58.62	57.06	5.57	9.75
2.00	103.63	101.15	104.20	105.23	105.02	100.13	100.17	105.78	108.66	103.78	2.85	2.74
4.00	221.08	210.48	211.86	205.60	202.11	213.85	209.75	206.58	208.10	209.93	5.46	2.60
6.00	325.71	338.78	322.76	312.83	313.74	310.74	312.25	313.62	315.52	318.44	9.14	2.87
8.00	437.89	450.68	451.96	422.12	421.31	423.74	430.95	427.62	431.94	433.13	11.57	2.67
10.00	555.05	551.29	555.45	529.41	527.30	534.18	541.08	539.08	535.17	540.89	10.71	1.98
12.00	648.24	656.64	651.66	625.63	628.05	626.12	633.83	631.85	629.40	636.83	11.98	1.88
14.00	764.49	728.70	759.86	685.09	676.66	698.66	708.45	712.78	728.89	718.17	30.48	4.24
16.00	881.41	863.86	855.65	812.91	817.86	810.40	833.07	830.64	835.55	837.93	24.36	2.91
30.00	1565.52	1561.29	1556.45	1452.04	1482.11	1500.13	1476.83	1482.66	1500.90	1508.66	41.86	2.77
50.00	2637.95	2779.79	2794.31	2622.25	2639.09	2622.44	2526.61	2660.29	2684.31	2663.00	82.50	3.10
100.00	5435.76	5506.66	5473.37	5128.64	5249.94	5250.67	5362.21	5383.92	5363.69	5350.54	121.18	2.26

Table 26 Area under the peak of KP used in calibration curve construction

conc (µg/ml)	Area under the peak (mAu)									mean	SD	%RSD
	A	B	C	D	E	F	G	H	I			
0.20	11.93	11.34	11.33	8.73	10.24	10.25	11.13	9.44	11.49	10.66	1.06	9.95
0.50	29.72	30.59	34.87	27.51	28.91	33.00	34.44	32.62	32.49	31.57	2.53	8.00
1.00	64.72	58.55	54.92	48.59	61.19	48.52	57.11	61.32	58.62	57.06	5.57	9.75
2.00	103.63	101.15	104.20	105.23	105.02	100.13	100.17	105.78	108.66	103.78	2.85	2.74
4.00	221.08	210.48	211.86	205.60	202.11	213.85	209.75	206.58	208.10	209.93	5.46	2.60
6.00	325.71	338.78	322.76	312.83	313.74	310.74	312.25	313.62	315.52	318.44	9.14	2.87
8.00	437.89	450.68	451.96	422.12	421.31	423.74	430.95	427.62	431.94	433.13	11.57	2.67
10.00	555.05	551.29	555.45	529.41	527.30	534.18	541.08	539.08	535.17	540.89	10.71	1.98
12.00	648.24	656.64	651.66	625.63	628.05	626.12	633.83	631.85	629.40	636.83	11.98	1.88
14.00	764.49	728.70	759.86	685.09	676.66	698.66	708.45	712.78	728.89	718.17	30.48	4.24
16.00	881.41	863.86	855.65	812.91	817.86	810.40	833.07	830.64	835.55	837.93	24.36	2.91
30.00	1565.52	1561.29	1556.45	1452.04	1482.11	1500.13	1476.83	1482.66	1500.90	1508.66	41.86	2.77
50.00	2637.95	2779.79	2794.31	2622.25	2639.09	2622.44	2526.61	2660.29	2684.31	2663.00	82.50	3.10
100.00	5435.76	5506.66	5473.37	5128.64	5249.94	5250.67	5362.21	5383.92	5363.69	5350.54	121.18	2.26

Table 27 Cumulative amount of KP permeated from gels prepared with 3%w/w of CBP2020 (Formulation 1)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	0	0	0	0	0
30	0	0	0	0	0
60	0	0	0	0	0
90	3.908	1.415	2.032	2.452	1.298
120	5.092	3.264	3.383	3.913	1.023
180	7.647	6.758	5.717	6.707	0.966

Table 28 Cumulative amount of KP permeated from gels prepared with 2%w/w of CBP2020 (Formulation 2)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	0	0	0	0	0
30	3.025	2.422	1.925	2.457	0.551
60	5.290	3.902	2.619	3.937	1.336
90	6.226	4.387	3.638	4.750	1.331
120	8.320	5.422	5.195	6.312	1.743
180	14.663	9.174	8.030	10.622	3.546

Table 29 Cumulative amount of KP permeated from gels prepared with 1.5%w/w of CBP2020 (Formulation 3)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	0	0	0	0	0
30	2.027	1.953	1.861	1.947	0.083
60	2.993	2.991	2.982	2.989	0.006
90	4.048	4.578	5.176	4.601	0.564
120	6.077	5.603	7.343	6.341	0.899
180	10.028	10.498	13.598	11.374	1.940

Table 30 Cumulative amount of KP permeated from gels prepared with 3%w/w of CBP980 (Formulation 4)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	0	0	0	0	0
30	0	0	0	0	0
60	0	0	0	0	0
90	1.012	1.203	2.664	1.626	0.904
120	2.315	2.781	3.625	2.907	0.664
180	3.568	5.243	5.844	4.885	1.179

Table 31 Cumulative amount of KP permeated from gels prepared with 2%w/w of CBP980 (Formulation 5)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	0	0	0	0	0
30	0	0	0	0	0
60	0	0	0	0	0
90	2.075	2.678	2.685	2.479	0.350
120	2.859	2.992	3.744	3.198	0.477
180	5.431	4.903	6.012	5.449	0.555

Table 32 Cumulative amount of KP permeated from gels containing 1.5%w/w of CBP980 (Formulation 6)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	0	0	0	0	0
30	0	0	0	0	0
60	0	0	0	0	0
90	1.952	2.302	2.011	2.088	0.187
120	2.476	2.619	2.526	2.540	0.072
180	4.184	5.289	5.111	4.861	0.594

Table 33 Cumulative amount of KP permeated from gels prepared with 3%w/w of HPMC (Formulation 7)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	0	0	0	0	0
30	0	0	0	0	0
60	0	0	0	0	0
90	1.896	2.015	2.192	2.034	0.149
120	2.680	2.696	2.800	2.725	0.065
180	5.140	4.054	3.601	4.265	0.791

Table 34 Cumulative amount of KP permeated from gels prepared with 2%w/w of HPMC and containing ETOH 35.5%w/w (Formulation 8)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	0	0	0	0	0
30	0	0	0	0	0
60	1.596	1.987	2.515	2.033	0.461
90	2.633	2.955	3.164	2.917	0.267
120	3.457	3.896	4.058	3.804	0.311
180	4.155	6.441	7.566	6.054	1.738

Table 35 Cumulative amount of KP permeated from gels containing ETOH 30%w/w (Formulation 9)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	2.420	0.807	1.397
20	0	0	2.803	0.934	1.618
30	0	0	3.696	1.232	2.134
60	0	3.294	4.538	2.611	2.345
90	3.599	3.850	5.173	4.207	0.846
120	5.157	4.722	5.617	5.165	0.448
180	5.680	5.643	6.510	5.944	0.490

Table 36 Cumulative amount of KP permeated from gels containing ETOH 40%w/w (Formulation 10)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	2.519	2.381	2.164	2.355	0.179
30	2.947	2.747	2.616	2.770	0.167
60	5.127	3.839	4.425	4.464	0.645
90	5.888	4.409	4.866	5.054	0.757
120	7.043	5.984	6.098	6.375	0.581
180	9.206	6.703	6.809	7.573	1.416

Table 37 Cumulative amount of KP permeated from gels pH 3.4 (Formulation 11)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	2.942	0	0	0.981	1.699
20	3.543	0	0	1.181	2.046
30	4.106	0	2.783	2.296	2.096
60	6.555	3.002	3.636	4.398	1.895
90	8.862	5.548	8.299	7.570	1.773
120	12.683	9.522	11.700	11.302	1.617
180	22.152	14.671	22.212	19.678	4.337

Table 38 Cumulative amount of KP permeated from gels pH 5.7 (Formulation 12)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	2.497	0.832	1.442
20	2.258	0	2.822	1.693	1.493
30	2.557	0	3.444	2.000	1.788
60	3.004	2.149	3.628	2.927	0.742
90	3.890	3.196	4.912	4.000	0.863
120	5.257	4.076	6.034	5.122	0.986
180	6.793	6.190	9.622	7.535	1.832

Table 39 Cumulative amount of KP permeated from gels pH 7.0 (Formulation 13)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	3.236	2.879	3.355	3.157	0.248
20	3.658	3.279	3.723	3.553	0.240
30	4.158	3.776	4.137	4.024	0.215
60	4.845	4.214	4.683	4.580	0.328
90	5.293	4.551	5.344	5.063	0.444
120	6.265	4.929	6.089	5.761	0.726
180	7.499	5.709	7.136	6.781	0.946

Table 40 Cumulative amount of KP permeated from gels without additive (Formulation 14)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	0	0	0	0	0
30	0	0	0	0	0
60	3.544	2.456	2.43	2.810	0.636
90	5.194	3.739	3.179	4.037	1.040
120	8.114	6.481	6.872	7.156	0.853
180	9.629	8.928	8.006	8.854	0.814

Table 41 Cumulative amount of KP permeated from gels containing 5%w/w PG (Formulation 15)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	0	0	0	0	0
30	0	0	0	0	0
60	1.952	1.563	2.552	2.022	0.498
90	3.182	2.555	4.340	3.359	0.906
120	3.566	2.940	4.856	3.787	0.977
180	4.061	4.082	6.519	4.887	1.413

Table 42 Cumulative amount of KP permeated from gels containing 0.5%w/w TW80 (Formulation 16)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	0	0	0	0	0
30	0	0	0	0	0
60	0	0	0	0	0
90	0	0	0	0	0
120	2.413	2.344	2.264	2.340	0.075
180	2.751	2.956	3.099	2.935	0.175

Table 43 Cumulative amount of KP permeated from gels containing 1%w/w L-LA (Formulation 17)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	0	0	0	0	0
30	0	0	0	0	0
60	2.465	2.357	3.223	2.682	0.472
90	3.632	3.805	7.261	4.900	2.047
120	6.050	7.215	10.486	7.917	2.300
180	13.172	11.596	19.988	14.919	4.460

Table 44 Cumulative amount of KP permeated from gels containing PG-TW80 (Formulation 18)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	2.273	2.324	0	1.532	1.327
20	2.628	2.811	0	1.813	1.573
30	2.872	3.355	0	2.076	1.814
60	3.851	3.696	2.728	3.425	0.608
90	4.719	4.617	3.186	4.174	0.857
120	5.462	5.985	4.346	5.264	0.837
180	8.740	8.933	6.860	8.178	1.145

Table 45 Cumulative amount of KP permeated from gels containing PG- L-LA (Formulation 19)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	4.024	0	0	1.341	2.323
20	5.075	3.873	0	2.982	2.652
30	5.777	4.356	0	3.378	3.010
60	8.321	5.276	3.563	5.720	2.410
90	11.452	6.478	4.101	7.344	3.751
120	15.208	7.735	5.953	9.632	4.910
180	22.506	11.638	11.423	15.189	6.338

Table 46 Cumulative amount of KP permeated from gels containing PG-TW80-L-LA (Formulation 20)

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	2.990	2.567	3.536	3.031	0.486
30	3.491	3.877	4.014	3.794	0.271
60	4.417	4.454	4.902	4.591	0.270
90	6.374	4.800	6.514	5.896	0.951
120	8.270	7.453	10.595	8.773	1.630
180	13.520	10.145	15.642	13.102	2.773

Table 47 Cumulative amount of KP permeated from commercial KP gel 1

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	5.938	4.295	4.619	4.951	0.871
20	6.692	5.696	5.094	5.827	0.807
30	7.318	7.373	5.705	6.798	0.948
60	8.266	8.743	7.646	8.218	0.550
90	10.322	10.970	8.974	10.089	1.018
120	11.979	12.854	9.801	11.544	1.572
180	17.997	18.062	14.660	16.906	1.946

Table 48 Cumulative amount of KP permeated from commercial KP gel 2

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	0	0	0	0	0
30	2.078	0	0	0.693	1.200
60	2.631	0	0	0.877	1.519
90	3.545	2.601	2.122	2.756	0.724
120	4.186	3.741	3.771	3.900	0.249
180	7.096	5.420	4.295	5.603	1.410

Table 49 Cumulative amount of KP permeated from gel Formulation 19 under stress conditions

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	0	0	0	0	0
20	0	0	0	0	0
30	0	0	0	0	0
60	2.519	4.055	3.414	3.329	0.771
90	4.226	4.514	3.867	4.202	0.324
120	5.638	7.352	5.551	6.180	1.016
180	9.409	10.962	10.501	10.291	0.798

Table 50 Cumulative amount of KP permeated from commercial KP gel1 under stress conditions.

Time (min)	KP Permeated ($\mu g/cm^2$)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	3.574	4.125	4.276	3.992	0.370
20	4.362	4.755	6.148	5.088	0.939
30	4.792	6.011	9.979	6.927	2.712
60	5.206	7.337	11.134	7.892	3.003
90	6.064	10.413	12.586	9.688	3.321
120	8.732	12.550	13.857	11.713	2.663
180	15.881	15.741	15.710	15.777	0.091

Table 51 Cumulative amount of KP released from commercial KP gel1 through cellophane membrane at 25 °C

Time (min)	KP Released (μg/cm^2)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	49.945	41.425	39.311	43.560	5.630
20	102.299	92.152	80.320	91.590	11.000
30	160.870	148.986	136.382	148.746	12.246
60	331.240	327.718	303.733	320.897	14.968
90	513.718	503.063	456.155	490.979	30.625
120	711.382	695.990	642.284	683.219	36.276
180	1123.531	1118.585	1036.772	1092.963	48.725

Table 52 Cumulative amount of KP released from Commercial KP gel1 through cellophane membrane at 37 °C

Time (min)	KP Released (μg/cm^2)			Mean	SD
	Cell 1	Cell 2	Cell 3		
10	71.7670	68.345	65.287	68.434	3.193
20	149.379	148.337	120.129	139.282	16.595
30	230.341	227.871	194.581	217.598	19.971
60	484.915	486.793	471.241	480.983	8.489
90	736.544	668.800	651.982	685.775	44.764
120	992.199	912.239	882.139	928.859	56.881
180	1435.710	1412.735	1299.476	1382.640	72.933

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