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Appendices

Appendix A

Table A.1 Data of selection of hard gelatin capsule

show weight of mineral oil (gm.) at temperature 30 °C, RH 40-60% for 30 days

Day	Licap					Coni-snap					Cap-lock					Cap 0				
0	0.5935	0.6011	0.6271	0.6249	0.5946	0.5976	0.5917	0.594	0.6157	0.5848	0.5874	0.5704	0.5946	0.5985	0.6173	0.599	0.6032	0.5938	0.6041	0.5959
2	0.5933	0.6007	0.6267	0.6247	0.5934	0.5952	0.5902	0.5933	0.6144	0.5804	0.5864	0.5657	0.5887	0.5926	0.6107	0.5989	0.603	0.5935	0.603	0.5951
4	0.5934	0.601	0.6267	0.6248	0.5935	0.5957	0.5718	0.5933	0.5769	0.5802	0.5859	*	*	*	*	0.5986	0.5994	0.5937	0.6034	0.5952
6	0.5933	0.6003	0.6258	0.6248	0.5933	0.5641	*	0.5933	*	0.5671	0.5855					0.5984	*	0.5935	0.6032	0.5955
8	0.5935	0.5998	0.6255	0.6247	0.5936	*		0.5928		*	0.5853					0.5941		0.5931	0.5891	0.595
10	0.5937	0.6001	0.6259	0.6249	0.5934			0.561			0.5861					*		0.5929	*	0.5896
12	0.5935	0.5957	0.6257	0.6246	0.5933			*			0.5957							0.5929		*
14	0.5934	*	0.6255	0.625	0.5934						0.5859							0.5928		
16	0.5933		0.6258	0.6245	0.5932						0.5859							0.593		
18	0.593		0.6149	0.6242	0.593						0.5854							0.5914		
20	0.5934		*	0.6244	0.5936						0.5853							*		
22	0.5928			0.6243	0.5935						0.586									
24	0.593			0.6245	0.5937						0.5858									
26	0.5931			0.6245	0.5941						0.5855									
28	0.5925			0.624	0.5935						0.5859									
30	0.5926			0.6241	0.5937						0.5852									

Table A.2 Data of selection of hard gelatin capsule

show weight of PEG400 (gm.) at temperature 30 °C, RH 40-60% for 30 days

Day	Licap					Coni-snap					Cap-lock					Cap 0				
0	0.5009	0.606	0.568	0.5976	0.6044	0.6024	0.6045	0.6018	0.5987	0.6005	0.5966	0.6048	0.6127	0.6234	0.5986	0.5954	0.629	0.6174	0.6027	0.6001
2	0.6241	0.636	0.5994	0.6249	0.6295	0.6227	0.6294	0.5996	0.6112	0.6201	0.6128	0.6127	0.6475	0.6528	0.6442	0.5515	0.6612	0.662	0.5429	0.5858
4	0.6271	0.6487	0.6385	0.6401	0.5933	0.6172	0.6314	0.5811	0.6042	0.6257	0.5871	0.6274	0.5763	0.6004	0.6283	*	0.6678	0.6553	*	*
6	0.6316	0.6751	0.621	0.6452	*	*	0.6354	*	*	0.6312	*	0.6122	*	*	0.6319		0.6752	0.6577		
8	0.6419	0.6827	*	0.6127			0.6463			0.5914		0.6427			0.5337		0.6838	0.6477		
10	0.6237	0.6411		*			0.6287					0.6249			*		0.6612	*		
12	*	*					*					*					*			
14																				
16																				
18																				
20																				
22																				

* = leak

Table A.3 Data of selection of hard gelatin capsule

show weight of soybean oil (gm.) at temperature 30 oC, RH 40-60% for 30 days

Day	Licap					Coni-snap					Cap-lock					Cap 0				
0	0.6042	0.6134	0.6058	0.5984	0.5984	0.6048	0.6081	0.603	0.6	0.6015	0.6124	0.5936	0.621	0.6004	0.598	0.595	0.6036	0.5919	0.6049	0.5966
2	0.6043	0.6035	0.6055	0.5982	0.5982	0.6045	0.6077	0.594	0.5995	0.5827	0.6122	0.5842	0.6208	0.5978	0.5975	0.5949	0.6024	0.5917	0.6049	0.5964
4	0.6031	0.6128	0.6048	0.5974	0.5972	0.6034	0.6065	*	0.598	*	0.6105	*	0.6192	*	0.5963	0.594	0.6024	0.591	0.604	0.595
6	0.6025	0.6121	0.6036	0.5966	0.5966	0.6022	0.6053		0.5974		0.6098		0.6192		0.5958	0.5937	0.6018	0.5901	0.6031	0.5944
8	0.6032	0.6126	0.6046	0.5973	0.5972	0.603	0.6061		0.598		0.6102		0.619		0.596	0.594	0.5943	0.5909	0.6044	0.5953
10	0.6032	0.6124	0.6047	0.5976	0.5977	0.6032	0.6062		0.5989		0.6104		0.6188		0.5962	0.5942	*	0.5906	0.6042	0.5956
12	0.6035	0.6126	0.6049	0.5972	0.5977	0.6034	0.606		0.5982		0.6106		0.6195		0.5964	0.5942		0.5911	0.6039	0.5955
14	0.6028	0.6118	0.6047	0.5976	0.5982	0.6029	0.6059		0.5981		0.6108		0.6194		0.5959	0.5949		0.5915	0.6045	0.5953
16	0.6033	0.6122	0.6053	0.5977	0.598	0.6035	0.6065		0.5985		0.6103		0.6188		0.5967	0.5942		0.5914	0.6041	0.5959
18	0.6038	0.6125	0.6052	0.598	0.598	0.6037	0.6068		0.5983		0.6108		0.6193		0.597	0.5946		0.5919	0.6048	0.5954
20	0.6034	0.6123	0.6046	0.5975	0.5976	0.6035	0.6067		0.5985		0.605		0.619		0.5968	0.5942		0.5913	0.6043	0.5957
22	0.6037	0.613	0.6052	0.5977	0.5978	0.6034	0.6065		0.5988		0.6112		0.6167		0.5967	0.5944		0.5914	0.6045	0.5958
24	0.603	0.6123	0.6041	0.5972	0.5972	0.6028	0.6056		0.5977		0.6105		*		0.5963	0.5939		0.5908	0.604	0.5955
26	0.6033	0.6125	0.6043	0.5975	0.5975	0.603	0.6058		0.5979		0.6107				0.5965	0.5942		0.5909	0.6042	0.5957
28	0.6036	0.6128	0.6048	0.5976	0.5979	0.6032	0.6061		0.5984		0.611				0.5968	0.5943		0.5913	0.6044	0.596
30	0.6031	0.6123	0.6046	0.5969	0.597	0.6024	0.6057		0.5977		0.6101				0.5957	0.5937		0.5907	0.6034	0.5948

Table A.4 Data of selection of hard gelatin capsule

show weight of Isopropyl myristate (gm.) at temperature 30 ˚C, RH 40-60% for 30 days

Day	Licap					Coni-snap					Cap-lock					Cap 0				
0	0.5958	0.5915	0.6023	0.6091	0.5909	0.5976	0.5917	0.594	0.6171	0.5948	0.5955	0.591	0.5926	0.5848	0.589	0.5961	0.6071	0.591	0.5797	0.5931
2	0.5951	0.5967	0.6015	0.6082	0.5901	0.5952	0.5718	0.5614	0.6144	0.5804	0.5862	0.5881	0.5843	0.5762	0.5811	0.5805	0.5942	0.5849	0.5791	0.5926
4	0.5952	0.5895	0.6011	0.6079	0.5902	0.5957	*	*	0.5769	0.5671	*	*	*	*	*	0.5804	*	*	0.5795	0.5814
6	0.5946	*	0.5996	0.6076	0.5887	0.5641			*	*						0.5747			0.5758	*
8	0.5946		0.6004	0.6071	*	*										*			*	
10	0.5944		0.6006	0.607																
12	0.5939		0.6011	0.6074																
14	0.5896		0.6007	0.5884																
16	*		0.5994	*																
18			0.5999																	
20			0.5996																	
22			0.5984																	
24			0.5744																	
26			*																	
28																				
30																				

* = leak

Table A.5 Data of selection of hard gelatin capsule

show weight of Oleic acid (gm.) at temperature 30 °C, RH 40-60% for 30 days

Day	Licap					Coni-snap					Cap-lock					Cap 0				
0	0.4869	0.4784	0.5046	0.4818	0.484	0.6047	0.5938	0.6009	0.5909	0.5905	0.6095	0.6	0.6009	0.6005	0.5981	0.6004	0.5922	0.596	0.596	0.6083
2	0.4847	0.4767	0.5021	0.4802	0.4818	0.6013	0.5924	0.5984	0.5895	0.59	0.5948	0.5964	0.5975	0.5783	0.5954	0.596	0.5891	0.5921	0.593	0.6052
4	0.4852	0.477	0.5029	0.4804	0.4824	0.6019	0.593	0.5994	0.5902	0.5907	*	0.5971	0.5979	*	0.5956	0.5961	0.5893	0.5925	0.5937	0.6056
6	0.4848	0.4765	0.5023	0.4796	0.4818	0.6006	0.5917	0.5983	0.5891	0.5895		0.5955	0.597		0.5946	0.5948	0.5884	0.5916	0.5926	0.605
8	0.4853	0.4765	0.5029	0.4805	0.4825	0.6019	0.5932	0.5993	0.5903	0.5905		0.5971	0.598		0.5958	0.5963	0.5891	0.5924	0.5936	0.6056
10	0.4854	0.4768	0.5028	0.4821	0.4822	0.601	0.5925	0.5993	0.5901	0.5904		0.597	0.5977		0.5964	0.596	0.589	0.5923	0.5935	0.6054
12	0.4844	0.4764	0.5022	0.4797	0.4816	0.6008	0.5922	0.5985	0.5897	0.5899		0.5964	0.5973		0.5946	0.5951	0.5882	0.5916	0.5925	0.6051
14	0.486	0.478	0.5034	0.481	0.4832	0.6028	0.5938	0.5978	0.5894	0.5896		0.5982	0.599		0.5966	0.5969	0.5896	0.5935	0.5945	0.6067
16	0.4837	0.4761	0.5015	0.4791	0.4812	0.6	0.5911	0.5974	0.5845	0.5892		0.5955	0.5962		0.594	0.5946	0.5876	0.5913	0.5921	0.6039
18	0.484	0.4765	0.5016	0.4793	0.4816	0.6	0.5894	0.5972	0.5857	0.5892		0.5956	0.5963		0.594	0.595	0.5877	0.5897	0.5924	0.6042
20	0.4836	0.4766	0.5019	0.4803	0.4826	0.5999	0.591	0.597	0.5861	0.5906		0.5961	0.5982		0.5957	0.5965	0.5877	*	0.5935	0.6041
22	0.4829	0.4753	0.5009	0.4784	0.4802	0.5996	0.5906	0.5965	0.588	0.5882		0.5946	0.5956		0.5935	0.5925	0.5844		0.5917	0.6034
24	0.485	0.4772	0.503	0.4802	0.4824	0.602	0.5911	0.5992	0.5904	0.5907		0.5973	0.5983		0.5957	0.5966	0.5766		0.5938	0.6062
26	0.4843	0.476	0.5034	0.4799	0.4823	0.5997	0.5924	0.5986	0.59	0.5887		0.5966	0.5975		0.5953	0.5949	0.5781		0.5938	0.6055
28	0.4853	0.4766	0.5024	0.4787	0.482	0.6004	0.5918	0.5979	0.5889	0.5891		0.5978	0.5968		0.5947	0.5953	0.5666		0.594	0.6061
30	0.4856	0.4751	0.5027	0.4795	0.4816	0.5995	0.5926	0.5983	0.5874	0.5896		0.5969	0.5971		0.5952	0.5961	*		0.5927	0.6053

Table A.6 Data of selection of hard gelatin capsule

show weight of MCToil (gm.) at temperature 30 °C, RH 40-60% for 30 days

Day	Licap					Coni-snap					Cap-lock					Cap 0				
0	0.4882	0.5034	0.5055	0.4953	0.5004	0.6058	0.6065	0.601	0.6043	0.5982	0.5941	0.5986	0.5924	0.6016	0.5965	0.5935	0.5997	0.585	0.5908	0.5922
2	0.4845	0.5039	0.5053	0.4953	0.5004	0.5715	0.6069	0.6017	0.5559	0.5755	0.5852	0.058	0.5506	0.5628	0.5845	0.5736	0.5988	0.5848	0.5906	0.5917
4	*	0.504	0.5054	0.4959	0.5004	*	0.603	0.6018	*	*	*	*	*	*	*	*	0.595	0.5848	0.5905	0.5918
6		0.5037	0.5053	0.4954	0.5002		*	0.601									*	0.5841	0.5901	0.5912
8		0.5032	0.5059	0.4953	0.5005			0.6007										0.5851	0.5908	0.5921
10		0.5036	0.5055	0.4954	0.5006			0.5962										0.5848	0.5907	0.592
12		0.5035	0.5054	0.4954	0.5003			*										0.5817	0.5898	0.5906
14		0.5045	0.5065	0.4966	0.5017													*	0.5919	*
16		0.5028	0.5045	0.4948	0.4994														0.5895	
18		0.5032	0.5045	0.4947	0.4994														0.5897	
20		0.5031	0.5059	0.4957	0.5009														0.5912	
22		0.5024	0.5057	0.4948	0.5004														0.5894	
24		0.5028	0.5035	0.4952	0.4995														0.5914	
26		0.5041	0.5049	0.4954	0.5006														*	
28		0.5037	0.5051	0.4947	0.4997															
30		0.5033	0.5048	0.4951	0.5003															

Table A.7 Data of selection of hard gelatin capsule

show weight of olive oil (gm.) at temperature 30 °C, RH 40-60% for 30 days

Day	Licap					Coni-snap					Cap-lock					Cap 0				
0	0.5988	0.5997	0.6077	0.6005	0.6054	0.5988	0.5997	0.6077	0.6005	0.6054	0.6175	0.6009	0.5995	0.6052	0.6102	0.5919	0.6171	0.6068	0.5894	0.5953
2	0.5976	0.598	0.6068	0.5997	0.6047	0.5976	0.598	0.6068	0.5997	0.6047	0.6165	0.5993	0.5882	0.6035	0.6089	0.592	0.6162	0.6067	0.5767	0.5949
4	0.597	0.5977	0.6058	0.5998	0.6045	0.597	0.5977	0.6058	0.5998	0.6045	0.6165	0.5983	*	0.6037	0.6086	0.5921	0.6159	0.6063	*	0.5951
6	0.5963	0.5972	0.6063	0.5983	0.6043	0.5963	0.5972	0.6063	0.5983	0.6043	0.6155	0.5995		0.6025	0.6078	0.592	0.6154	0.6065		0.595
8	0.5967	0.5979	0.6062	0.5988	0.6048	0.5967	0.5979	0.6062	0.5988	0.6048	0.616	0.5996		0.6032	0.6086	0.5902	0.6149	0.6057		0.5941
10	0.5965	0.5982	0.6067	0.5985	0.6044	0.5965	0.5982	0.6067	0.5985	0.6044	0.6161	0.5998		0.6034	0.6085	0.5904	0.6156	0.6059		0.594
12	0.5966	0.5977	0.6072	0.5986	0.6042	0.5966	0.5977	0.6072	0.5986	0.6042	0.6162	0.5994		0.6031	0.6083	0.5905	0.6163	0.6063		0.5938
14	0.5964	0.5978	0.6067	0.5952	0.6042	0.5964	0.5978	0.6067	0.5952	0.6042	0.616	0.5995		0.6036	0.6081	0.5912	0.6167	0.6065		0.5948
16	0.596	0.5978	0.6068	*	0.6045	0.596	0.5978	0.6068	*	0.6045	0.6164	0.5988		0.6035	0.6079	0.5876	0.6168	0.6059		0.5945
18	0.5965	0.598	0.6071		0.6042	0.5965	0.598	0.6071		0.6042	0.6162	0.599		0.6034	0.6081	*	0.6166	0.6055		0.5944
20	0.5966	0.5984	0.6069		0.6044	0.5966	0.5984	0.6069		0.6044	0.6161	0.5991		0.6032	0.608		0.6158	0.6053		0.5948
22	0.5959	0.5984	0.6072		0.6045	0.5959	0.5984	0.6072		0.5936	0.6167	0.5997		0.6036	0.6088		0.6164	0.6057		0.5945
24	0.5961	0.5986	0.6071		0.5923	0.5961	0.5986	0.6071		*	0.6164	0.5993		0.6032	0.6082		0.6156	0.6056		0.5951
26	0.5964	0.5988	0.6069		*	0.5943	0.5988	0.6069			0.6168	0.5997		0.6037	0.6085		0.616	0.6064		0.5947
28	0.5961	0.5985	0.6069			*	0.5985	0.6069			0.6165	0.5996		0.6034	0.6082		0.6154	0.6058		0.5898
30	0.5962	0.5985	0.6067				0.5985	0.6067			0.6161	0.5988		0.6025	0.6081		0.6157	0.6055		*

Table A.8 Data of selection of hard gelatin capsule

show weight of silicone oil (gm.) at temperature 30 °C, RH 40-60% for 30 days

Day	Licap					Coni-snap					Cap-lock					Cap 0				
0	0.5071	0.4959	0.5059	0.5016	0.543	0.5972	0.6033	0.5942	0.6031	0.6137	0.6169	0.6171	0.6125	0.6081	0.5988	0.597	0.6062	0.6082	0.6099	0.5909
2	0.5065	0.4954	0.5054	0.5016	0.5413	0.5904	0.5983	0.59	0.6002	0.6029	0.6121	0.6138	0.5911	0.6053	0.5971	0.5968	0.606	0.6082	0.6097	0.5896
4	0.5072	0.4959	0.506	0.502	0.5426	*	*	*	0.5941	*	*	*	*	0.6023	*	0.5969	0.6061	0.6083	0.6099	0.5848
6	0.5069	0.4951	0.5051	0.5014	0.5424									*		0.5957	0.6057	0.6077	0.6083	*
8	0.5068	0.495	0.5054	0.5016	0.5418											0.5961	0.6061	0.6078	*	
10	0.5067	0.4952	0.5053	0.5017	0.5001											0.5967	0.6064	0.6081		
12	0.5068	0.4953	0.5052	0.5015	*											0.5962	0.6057	0.6077		
14	0.5072	0.4965	0.5059	0.5028												0.5975	0.6069	0.6092		
16	0.5066	0.4947	0.5046	0.5011												0.5953	0.6052	0.6071		
18	0.5066	0.4944	0.5051	0.5014												0.5956	0.6052	0.6061		
20	0.5071	*	0.5056	0.5021												0.5965	0.6061	0.5934		
22	0.5059		0.5043	0.5016												0.5937	0.6046	*		
24	0.5071		0.5057	0.5025												0.5956	0.6063			
26	0.5063		0.5047	0.5022												0.5951	0.6064			
28	0.5066		0.5055	0.4999												0.5931	0.6058			
30	0.5061		0.5058	*												*	0.6049			

Table A.9 Data of moisture uptake of mineral oil, storing at 45,55,75 and 92%RH for 30 days

Day	RH45%			RH55%			RH75%			RH92%		
Initial	8.2709	7.9685	7.9844	8.1199	8.1856	8.1757	7.572	7.9954	8.0142	8.0304	7.9533	8.1522
0	9.273	9.0172	8.9973	9.1648	9.1891	9.1858	8.5848	9.004	9.1984	9.0316	9.0552	9.164
2	9.2725	9.017	8.9973	9.1645	9.1887	9.185	8.5856	9.0037	9.1989	9.0318	9.0553	9.164
4	9.2728	9.0171	8.9971	9.1646	9.1896	9.1858	8.5849	9.0039	9.1983	9.032	9.0551	9.1634
6	9.273	9.0475	8.997	9.1642	9.1889	9.1852	8.585	9.0037	9.1984	9.032	9.0555	9.1639
8	9.2729	9.0172	8.9975	9.165	9.1882	9.1851	8.589	9.0048	9.1986	9.0318	9.0555	9.1638
10	9.2728	9.0174	8.9975	9.1647	9.1886	9.1842	8.5851	9.0047	9.1986	9.0321	9.0553	9.1638
12	9.2729	9.0172	8.9973	9.1649	9.1886	9.1853	8.5848	9.0049	9.1982	9.0321	9.0557	9.1634
14	9.2736	9.0164	8.9976	9.1658	9.1882	91853	8.58737	9.0054	9.1979	9.0325	9.0556	9.1641
16	9.2729	9.0172	8.9975	9.1643	9.1884	9.1851	8.5841	9.005	9.1984	9.0318	9.0552	9.1632
18	9.2728	9.0174	8.9974	9.1647	9.189	9.1852	8.584	9.0048	9.1985	9.0319	9.056	9.164
20	9.273	9.0172	8.9976	9.164	9.1882	9.1847	8.5841	9.0048	9.1984	9.032	9.0558	9.1635
22	9.2748	9.0177	8.998	9.1651	9.1875	9.186	8.5845	9.0048	9.1982	9.0325	9.0553	9.1639
24	9.2728	9.0173	8.9972	9.1642	9.1883	9.185	8.5851	9.0046	9.1985	9.032	9.0561	9.1641
26	9.2732	9.017	8.9974	9.1637	9.1879	9.1845	8.5851	9.0045	9.1988	9.0323	9.0557	9.1645
28	9.2739	9.0169	8.9976	9.1643	9.1885	9.1845	8.5862	9.0039	9.1979	9.0328	9.0552	9.1637
30	9.2729	9.017	8.9971	9.1647	9.1886	9.1853	8.5852	9.0048	9.1989	9.0323	9.0562	9.1644

Table A.10 Data of percent moisture uptake of mineral oil, storing at 45,55,75 and 92%RH for 30 days

Day	RH45%			RH55%			RH75%			RH92.5%			Average			
													RH45%	RH55%	RH75%	RH92%
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	-0.0499	-0.01907	0	-0.0287	-0.0399	-0.0790	0.07899	-0.02974	0.04222	0.01998	0.00908	0	-0.02299	-0.0492	0.030489	0.009685
4	-0.01996	-0.00954	-0.01975	-0.0191	0.0498	0.0000	0.00987	-0.00992	-0.00845	0.03998	-0.00908	-0.0593	-0.016417	0.0102	-0.002829	-0.009465
6	0	0.02861	-0.02962	-0.0571	-0.0199	-0.0592	0.01975	-0.02974	0	0.03998	0.02723	0.04942	-0.000337	-0.0455	-0.003332	0.038874
8	-0.00998	0	0.01975	0.0191	-0.0897	-0.0691	0.10861	0.07932	0.01689	0.01998	0.02723	-0.00988	0.003255	-0.0466	0.068272	0.012441
10	-0.01996	0.01907	0.01975	-0.0096	-0.0498	-0.1580	0.02962	0.0694	0.01689	0.04994	0.00908	0	0.006285	-0.0522	0.038638	0.019672
12	-0.00998	0	0	0.0096	-0.0498	-0.0494	0	0.08923	-0.01689	0.04994	0.04538	-0.03953	-0.003327	0.0299	0.024115	0.018594
14	-0.00979	0	0	0.00957	-0.04983	-0.0495	0	0.08923	-0.01689	0.04994	0.04907	-0.0593	-0.003265	0.0299	0.024115	0.013236
16	-0.00998	0	0.01975	0.0463	0.0698	-0.0691	-0.06912	0.09915	0	0.01998	0	-0.01977	0.003255	0.0157	0.010011	7.1E-05
18	-0.01996	0.01907	0.00987	0.0251	-0.0100	-0.0592	-0.07899	0.07932	0.00845	0.02996	0.0726	0.07907	0.002995	-0.0147	0.002925	0.060543
20	0	0	0.02962	0.1086	-0.0897	-0.1086	-0.06912	0.07932	0	0.03995	0.05445	-0.04942	0.009873	-0.0299	0.003401	0.014995
22	0	0	0.02962	-0.07656	-0.08969	-0.1089	-0.06912	0.07932	0	0.03995	0.05888	-0.04942	0.009873	0.0299	0.003401	0.016472
24	-0.01996	0.00954	-0.00987	0.0737	-0.0797	-0.0079	0.02962	0.05949	0.00845	0.03995	0.08168	0.0593	-0.006765	-0.00463	0.032518	0.060309
26	0.01996	-0.01907	0.00987	0.1731	-0.0196	-0.1273	0.02962	0.04957	0.03378	0.06992	0.04538	0.03953	0.003587	0.00875	0.037658	0.05161
28	0.01959	-0.01907	0.00987	-0.10527	-0.11958	-0.1287	0.02962	0.04957	0.03378	0.06992	0.04907	0.04942	0.003463	0.0299	0.037658	0.056134
30	-0.00998	-0.01907	-0.01975	0.0307	-0.0489	0.0494	0.03949	0.07932	0.04222	0.04994	0.0726	0	-0.016267	0.0104	0.053678	0.040847

Table A.11 Data of percent moisture uptake of liquid vehicle, storing at 45,55,75 and 92.5%RH for 30 days

Day	IPM				PEG400			
	RH45%	RH55%	RH75%	RH92.5%	RH45%	RH55%	RH75%	RH92.5%
0	0	0	0	0	0	0	0	0
2	-0.0020	-0.0105	0.0063	0.0785	8.417	5.461	12.932	26.648
4	-0.0149	0.0065	0.0220	0.0394	10.239	8.416	18.428	42.557
6	-0.0267	0.0254	0.0154	0.0425	10.593	13.472	23.555	55.234
8	0.0032	0.0563	0.0188	0.0425	10.646	13.513	25.626	65.190
10	0.0063	0.0169	0.0093	-0.0005	10.719	13.476	27.776	69.641
12	-0.0033	-0.0225	0.0062	0.0263	10.656	13.628	29.763	81.003
14	0.0014	0.0009	0.0198	0.0030	10.883	13.951	30.044	88.641
16	0.0033	-0.0047	0.0355	0.0294	10.711	13.752	29.741	90.256
18	0.0030	-0.0079	0.0196	0.0295	10.852	13.779	30.022	94.534
20	0.0099	0.0156	0.0287	0.0458	10.912	13.932	29.500	98.659
22	-0.0031	0.0007	0.0114	0.0318	11.038	14.037	30.208	101.911
24	-0.0068	-0.0116	0.0352	0.0264	10.739	13.976	30.309	109.959
26	0.0036	-0.0380	0.0510	0.0295	11.168	13.685	29.741	118.289
28	0.0022	0.0017	0.0428	0.0335	11.131	13.225	29.500	124.344
30	-0.0163	-0.0230	0.0511	0.0132	11.054	13.473	32.348	130.674

Table A.12 Data of percent moisture uptake of liquid vehicle, storing at 45,55,75 and 92.5%RH for 30 days

Day	Soybean oil				Olive oil			
	RH45%	RH55%	RH75%	RH92.5%	RH45%	RH55%	RH75%	RH92.5%
0	0	0	0	0	0	0	0	0
2	-0.0652	-0.047	-0.099	0.173	-0.0022	0.0244	0.0403	0.0850
4	-0.0054	0.014	0.065	0.1552	0.0078	0.0125	0.0305	0.0872
6	0.0298	0.184	0.16	0.16978	-0.0047	0.0247	0.0437	0.0935
8	0.1319	0.1339	0.1568	0.2168	0.0264	0.0412	0.0838	0.1254
10	0.0907	0.1622	0.1494	0.1475	0.0206	0.0613	0.0993	0.1170
12	0.1568	0.2375	0.21975	0.359	0.0440	0.0889	0.1178	0.1099
14	0.1864	0.2839	0.2607	0.379	0.0508	0.0994	0.1352	0.1437
16	0.26795	0.3397	0.2933	0.3952	0.0545	0.1054	0.1831	0.1628
18	0.4695	0.539	0.501675	0.638	0.0765	0.1368	0.1798	0.1723
20	0.56225	0.724	0.694575	0.842	0.0906	0.1437	0.1739	0.2048
22	0.6208	0.8034	0.7681	1.0042	0.0885	0.1507	0.1931	0.3227
24	0.772	0.956	0.88258	1.3605	0.0781	0.1646	0.2208	0.4228
26	0.9975	1.102	1.05723	1.285	0.1171	0.1924	0.2732	0.3955
28	1.0104	1.135	1.203	1.4666	0.1282	0.2009	0.2864	0.4117
30	1.0712	1.171	1.426	1.503	0.1330	0.2113	0.2945	0.4227

Table A.13 Data of percent moisture uptake of liquid vehicle, storing at 45,55,75 and 92.5%RH for 30 days

Day	Mineral oil				Silicone oil			
	RH45%	RH55%	RH75%	RH92.5%	RH45%	RH55%	RH75%	RH92.5%
0	0	0	0	0	0	0	0	0
2	-0.0230	-0.0492	0.0305	0.0097	-0.0361	-0.001403	0.006587	-0.0452
4	-0.0164	0.0102	-0.0028	-0.0095	-0.027	-0.0103	-0.0353	0.00081
6	-0.0003	-0.0455	-0.0033	0.0389	-0.01385	0.00187	0.0095	-0.0075
8	0.0033	-0.0466	0.0683	0.0124	-0.0541	0.0051	-0.0101	0.0043
10	0.0063	-0.0522	0.0386	0.0197	-0.0362	-0.0267	0.01004	-0.00214
12	-0.0033	0.0299	0.0241	0.0186	0.0385	0.00667	0.0068	-0.00547
14	-0.0033	0.0299	0.2411	0.0132	0.0631	-0.0171	-0.015	-0.0002
16	0.0033	0.0157	0.0100	0.0010	0.0541	0.0254	-0.0254	0.00015
18	0.0030	-0.0147	0.0029	0.0605	-0.0196	0.0453	0.01872	-0.0104
20	0.0099	-0.0299	0.0034	0.0150	0.0482	-0.0835	0.02529	-0.04
22	0.0099	0.0299	0.0034	0.0165	-0.0045	-0.0568	-0.0101	0.015
24	-0.0068	-0.0046	0.0325	0.0603	0.00561	-0.0061	-0.0153	0.02004
26	0.0036	0.0088	0.0377	0.0516	0.00254	0.0324	0.00687	-0.00076
28	0.0035	0.0299	0.0377	0.0561	0.00396	-0.063	-0.0049	0.0049
30	-0.0163	0.0104	0.0537	0.0408	-0.0541	-0.0774	-0.0959	-0.0401

Table A.14 Data of percent moisture uptake of liquid vehicle, storing at 45,55,75 and 92.5%RH for 30 days

Day	Oleic acid				MCT oil			
	RH45%	RH55%	RH75%	RH92.5%	RH45%	RH55%	RH75%	RH92.5%
0	0	0	0	0	0	0	0	0
2	-0.5949	-0.4362	-0.0311	0.092	0.226	0.1271	0.16159	0.241
4	-0.545	-0.431	-0.1136	0.18	0.1672	0.1426	0.186	0.392
6	-0.0642	-0.4328	-0.0884	0.2007	0.1564	0.1125	0.2098	0.3684
8	-0.489	-0.426	-0.0952	0.228	0.187	0.1723	0.25	0.42275
10	-0.444	-0.401	0.0202	0.431	0.2069	0.1047	0.21067	0.45292
12	-0.1856	-0.3713	0.0826	0.5397	0.2107	0.1758	0.223	0.4603
14	-0.293	-0.367	0.1103	0.609	0.2211	0.171	0.23033	0.478
16	-0.238	-0.181	0.1755	0.3878	0.206	0.1492	0.216	0.43819
18	0.0085	0.0095	0.2254	0.4629	0.2204	0.1638	0.2007	0.4539
20	0.173	0.0227	0.258	0.5107	0.226	0.142	0.1956	0.41819
22	0.143	0.0412	0.281	0.5675	0.1918	0.152	0.20087	0.42766
24	0.102	0.0391	0.3061	0.643	0.204	0.1671	0.2205	0.453
26	0.0537	0.01028	0.1954	0.6614	0.1955	0.1574	0.2208	0.4386
28	0.0047	0.0371	0.3413	0.681	0.1918	0.1476	0.2107	0.4529
30	0.134	0.098	0.5919	0.8607	0.226	0.15771	0.23524	0.492397

Table A.15 Liquid viscosity recorded by viscometer at 28°C

	viscosity(mPa)					average	S.D.
	1	2	3	4	5		
PEG4000	92.61	82.61	87.46	92.61	92.61	89.58	4.49
Olive oil	55.1	55.1	72.64	62.39	55.1	60.066	7.71
Soybean oil	75.1	55.1	55.4	68.4	75.1	65.82	10.03
IPM	47.59	47.59	37.5	57.59	47.59	47.572	7.10
Mineral oil	92.61	92.61	100.5	92.61	92.61	94.188	3.53
Silicone oil	75.1	75.1	86.4	75.1	75.1	77.36	5.05
Oleic acid	86.4	82.55	82.55	82.55	86.4	84.09	2.11
MCT oil	64.5	64.5	75.4	64.5	64.5	66.68	4.87

Table A.16 Surface tension recorded by Cenco.DuNouy ring tensiometer at 30°C

	surface tension(Dynes/cm^2)					average	S.D.
	1	2	3	4	5		
PEG4000	64	63.5	64.4	63.1	63.5	63.7	0.50
Olive oil	47.6	48.8	46.5	48.9	47.2	47.8	1.04
Soybean oil	45.8	46.5	46.4	45.5	45.8	46	0.43
IPM	40.5	39.3	41.2	40.4	39.5	40.18	0.78
Mineral oil	45.5	45.2	46.35	44.7	44.1	45.17	0.85
Silicone oil	45.6	46.7	45.8	46	45.2	45.86	0.55
Oleic acid	54.8	55	54.1	54.2	55.3	54.68	0.52
MCT oil	42	43.1	42.6	42.7	42.1	42.5	0.45

Appendix B

Preparation of Phosphate Buffer pH7.2

27.22 g of monobasic potassium phosphate (KH_2PO_4) was dissolve in deionized water and diluted to 1,000 ml (= 0.2 M KH_2PO_4). Dissolve 8 g. of sodium hydroxide (NaOH) in water and dilute to 1000 ml (= 0.2M NaOH). 50 ml of 0.2 KH_2PO_4 was place in a 200-ml of volumetric flask, then 34.7 ml of 0.2 M NaOH was added and the water was adjusted to volume.

Calibration curve of dimenhydrinate

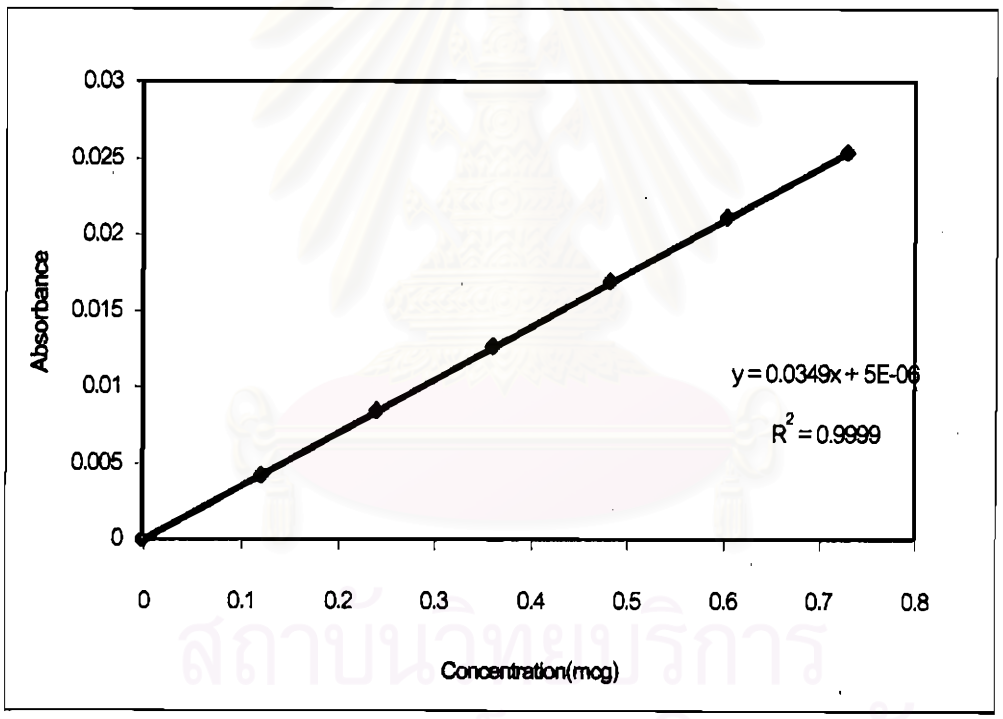

Figure B.1 Calibration curve of dimenhydrinate in phosphate buffer pH 7.2

Table B.1 Cumulative release of Gravol suppositories

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.031	0.027	0.030	0.030	0.002	31.457	26.921	30.410	29.596	2.375
15	0.071	0.070	0.070	0.070	0.001	71.862	70.376	70.795	71.011	0.766
30	0.095	0.096	0.096	0.096	0.001	97.362	7.941	98.367	67.890	51.920
45	0.097	0.098	0.098	0.098	0.001	101.013	101.955	102.039	101.669	0.570
60	0.097	0.097	0.096	0.097	0.000	102.954	102.521	102.256	102.577	0.352

Table B.2 Cumulative release of dimenhydrinate liquid filled capsule F2

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.003	0.002	0.002	0.003	0.000	2.971	2.413	2.483	2.622	0.304
15	0.004	0.003	0.003	0.003	0.001	3.938	2.845	3.544	3.442	0.553
30	0.007	0.006	0.006	0.006	0.000	6.981	5.971	6.510	6.488	0.505
45	0.008	0.008	0.008	0.008	0.000	8.758	7.729	8.348	8.278	0.518
60	0.010	0.009	0.009	0.009	0.000	10.044	9.379	9.591	9.672	0.340

F2 represents for dimenhydrinate in mineral oil with 5%Aerosil200

Table B.3 Cumulative release of dimenhydrinate liquid filled capsule F3

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.002	0.001	0.002	0.002	0.000	2.169	1.471	2.029	1.890	0.369
15	0.004	0.003	0.004	0.004	0.001	4.201	2.931	3.570	3.567	0.635
30	0.008	0.007	0.008	0.008	0.001	8.541	7.385	8.281	8.069	0.606
45	0.011	0.009	0.010	0.010	0.001	11.012	9.555	10.329	10.299	0.729
60	0.011	0.010	0.011	0.011	0.000	11.750	10.718	11.018	11.162	0.531

F3 represents for dimenhydrinate in mineral oil with 2.5%Aerosil200

Table B.4 Cumulative release of dimenhydrinate liquid filled capsule F4

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.00391	0.00506	0.00342	0.004	0.001	3.913	5.065	3.425	4.134	0.842
15	0.01110	0.01124	0.01096	0.011	0.000	11.140	11.281	10.996	11.139	0.143
30	0.02153	0.01909	0.02080	0.020	0.001	21.684	19.222	20.945	20.617	1.263
45	0.02687	0.02572	0.02614	0.026	0.001	27.237	26.004	26.491	26.577	0.621
60	0.03347	0.02959	0.02973	0.031	0.002	34.101	30.082	30.346	31.510	2.248

F4 represents for dimenhydrinate in mineral oil + 2.5%Aerosil200+1%Tween80+2.5%Dextrose

Table B.5 Cumulative release of dimenhydrinate liquid filled capsule F5

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.005	0.008	0.002	0.005	0.003	5.261	8.401	1.946	5.203	3.228
15	0.022	0.029	0.020	0.024	0.005	21.887	29.246	19.760	23.631	4.977
30	0.062	0.065	0.054	0.060	0.005	61.882	65.127	54.500	60.503	5.446
45	0.086	0.081	0.073	0.080	0.007	86.922	82.348	73.536	80.935	6.804
60	0.095	0.090	0.087	0.091	0.004	96.505	92.058	88.918	92.494	3.812

F5 represents for dimenhydrinate in mineral oil + 2.5%Aerosil200+2.5%Tween80

TableB.6 Cumulative release of dimenhydrinate liquid filled capsule F6

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.089	0.057	0.003	0.050	0.043	2.239	3.111	1.994	2.448	0.587
15	0.113	0.094	0.004	0.070	0.058	3.657	3.973	3.305	3.645	0.334
30	0.186	0.159	0.006	0.117	0.097	6.031	6.552	5.606	6.063	0.474
45	0.243	0.218	0.008	0.156	0.129	8.428	8.593	7.720	8.247	0.464
60	0.303	0.279	0.010	0.197	0.163	10.395	10.754	9.925	10.358	0.416

F6 represents for dimenhydrinate in mineral oil + 2.5%Aerosil200+1%Tween80

Table B.7 Cumulative release of dimenhydrinate liquid filled capsule F7

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.00299	0.00578	0.00788	0.006	0.002	2.99304	5.78436	7.87785	5.552	2.451
15	0.01433	0.01625	0.02026	0.017	0.003	14.3627	16.2981	20.3431	17.001	3.052
30	0.03091	0.03370	0.04085	0.035	0.005	31.0795	33.8739	41.1318	35.362	5.189
45	0.05236	0.05655	0.05969	0.056	0.004	52.8469	56.9974	60.3817	56.742	3.774
60	0.06946	0.06562	0.07225	0.069	0.003	70.4674	66.5216	73.5396	70.176	3.518

F7 represents for dimenhydrinate in mineral oil+ 2.5%Aerosil200+1%Tween80+5%Dextrose

Table B.8 Cumulative release of dimenhydrinate liquid filled capsule F8

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.00424	0.00982	0.00564	0.007	0.003	4.2415	9.82414	5.63716	6.568	2.905
15	0.03809	0.04855	0.04123	0.043	0.005	38.1711	48.7502	41.3393	42.754	5.430
30	0.07542	0.08693	0.08170	0.081	0.006	76.2668	88.102	82.638	82.336	5.923
45	0.09461	0.08938	0.09670	0.094	0.004	96.9655	92.2831	99.2753	96.175	3.563
60	0.09636	0.08973	0.09636	0.094	0.004	100.602	94.4195	100.861	98.627	3.646

F8 represents for dimenhydrinate in mineral oil + 2.5%Aerosil200 +5%Tween80

Table B.9 Cumulative release of dimenhydrinate liquid filled capsule F9

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.00703	0.01017	0.00878	0.009	0.002	7.03	10.17	8.78	8.661	1.573
15	0.01262	0.01436	0.02587	0.018	0.007	12.76	14.56	26.05	17.790	7.210
30	0.04297	0.03704	0.05065	0.044	0.007	43.36	37.53	51.34	44.078	6.933
45	0.06356	0.05518	0.06984	0.063	0.007	64.81	56.41	71.54	64.256	7.580
60	0.07437	0.06565	0.07647	0.072	0.006	76.90	67.99	79.57	74.817	6.066

F9 represents for dimenhydrinate in mineral oil

Table B.10 Cumulative release of dimenhydrinate liquid filled capsule F10

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.01329	0.01974	0.01398	0.016	0.004	13.29	19.74	13.98	15.670	3.543
15	0.04608	0.06318	0.05655	0.055	0.009	46.22	63.38	56.69	55.429	8.650
30	0.08673	0.09371	0.09720	0.093	0.005	87.33	94.54	97.91	93.257	5.405
45	0.09615	0.10174	0.10383	0.101	0.004	97.61	101.50	102.51	100.54	4.102
60	0.10261	0.10261	0.10400	0.103	0.001	102.03	103.39	103.72	103.05	0.889

F10 represents for dimenhydrinate in mineral oil + 2.5%Aerosil200 +5%Tween80 + 10% Lactose

Table B.11 Cumulative release of dimenhydrinate liquid filled capsule F11

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.01311	0.01957	0.01904	0.017	0.004	13.1116	19.5665	19.0431	17.240	3.585
15	0.05446	0.07365	0.07382	0.067	0.011	54.5892	73.8441	74.0133	67.482	11.166
30	0.09703	0.09668	0.09999	0.098	0.002	97.7014	97.6089	100.92	98.744	1.886
45	0.10261	0.10296	0.10313	0.103	0.000	102.254	101.856	103.06	102.39	0.419
60	0.10243	0.10261	0.10313	0.103	0.000	103.106	103.537	104.092	103.58	0.494

F11 represents for dimenhydrinate in mineral oil + 2.5%Aerosil200 +5%Tween80 + 10%Icing sugar

Table B.12 Cumulative release of dimenhydrinate liquid filled capsule F12

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.01400	0.01700	0.00800	0.013	0.005	14.24	17.00	8.48	13.240	4.347
15	0.06200	0.06000	0.05200	0.058	0.005	62.10	60.04	52.27	58.137	5.184
30	0.09400	0.09000	0.09100	0.092	0.002	99.65	100.64	99.18	99.82	2.176
45	0.09600	0.09200	0.09500	0.094	0.002	101.68	102.28	101.97	101.98	2.362
60	0.09500	0.09200	0.09600	0.094	0.002	102.04	102.57	102.46	102.36	1.790

F12 represents for dimenhydrinate in mineral oil + 3%Aerosil200+5%Tween80+10%Dextrose

Table B.13 Cumulative release of dimenhydrinate liquid filled capsule F13

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.01850	0.02430	0.02270	0.022	0.003	18.52	24.276	22.707	21.834	2.976
15	0.06680	0.08180	0.06860	0.072	0.008	67.03	82.091	68.816	72.646	8.228
30	0.10090	0.10260	0.10210	0.102	0.001	99.72	100.67	99.98	100.12	0.992
45	0.10300	0.10330	0.10370	0.103	0.000	101.82	101.39	101.59	101.6	0.400
60	0.10230	0.10280	0.10310	0.103	0.000	102.15	102.903	102.12	102.19	0.502

F13 represents for dimenhydrinate in mineral oil + 2.5%Aerosil200 +5%Tween80 + 10%NaCl

Table B.14 Cumulative release of dimenhydrinate liquid filled capsule F14

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.00090	0.00600	0.00050	0.002	0.003	0.913	0.599	0.459	0.657	0.232
15	0.00210	0.00110	0.00140	0.002	0.001	2.073	1.128	1.441	1.547	0.481
30	0.00300	0.00260	0.00290	0.003	0.000	3.036	2.605	2.886	2.842	0.219
45	0.00450	0.00420	0.00420	0.004	0.000	4.531	4.270	4.205	4.335	0.173
60	0.00540	0.00660	0.00610	0.006	0.001	5.553	6.650	6.201	6.135	0.552

F14 represents for dimenhydrinate in mineral oil with 2.5%Aerosil200+5%Span20

Table B.15 Cumulative release of dimenhydrinate liquid filled capsule F15

Time	Amount release (mcg)			Av.	SD	%Drug release			Av.	SD
(minutes)	1	2	3			1	2	3		
0	0	0	0	0	0	0	0	0	0	0
5	0.01650	0.01210	0.01360	0.014	0.002	16.544	12.078	13.648	14.090	2.266
15	0.02250	0.02010	0.02280	0.022	0.001	22.676	20.165	22.891	21.911	1.516
30	0.02500	0.02350	0.02590	0.025	0.001	25.343	23.780	26.259	25.127	1.253
45	0.02620	0.02660	0.02780	0.027	0.001	26.814	27.038	28.472	27.441	0.900
60	0.02640	0.02960	0.02840	0.028	0.002	27.285	30.252	29.344	28.960	1.520

F15 represents for dimenhydrinate in mineral oil with 2.5%white bee wax

Table B.16 Drug release curve of Gravol suppositories

Time	Absorbance				Amount release (mcg)				Av.	SD
(minutes)	1	2	3	4	1	2	3	4		
0	0	0	0	0	0	0	0	0	0	0
5	0.601	0.522	0.686	0.553	0.202	0.175	0.231	0.186	0.197	0.029
10	0.617	0.606	0.663	0.547	0.207	0.204	0.223	0.184	0.203	0.020
15	0.512	0.484	0.436	0.411	0.172	0.163	0.146	0.138	0.149	0.012
30	0.711	0.926	0.759	0.856	0.024	0.031	0.026	0.029	0.028	0.003
45	0.017	0.028	0.051	0.022	0.001	0.001	0.002	0.001	0.001	0.001
60	0.01	0.01	0.011	0.018	0.000	0.000	0.000	0.001	0.000	0.000

Table B.17 Drug release curve of dimenhydrinate liquid filled capsule F1

Time	Absorbance				Amount release (mcg)				Av.	SD
(minutes)	1	2	3	4	1	2	3	4		
0	0	0	0	0	0	0	0	0	0	0
5	0.495	0.522	0.687	0.490	0.083	0.088	0.115	0.082	0.095	0.018
10	0.968	1.1017	0.925	0.903	0.163	0.185	0.156	0.152	0.164	0.018
15	1.204	0.874	1.049	0.835	0.203	0.147	0.176	0.140	0.155	0.019
30	1.471	1.305	1.289	1.587	0.050	0.044	0.043	0.053	0.047	0.006
45	0.414	0.2578	0.1685	0.441	0.014	0.009	0.006	0.015	0.010	0.005
60	0.118	0.046	0.0366	0.146	0.004	0.001	0.001	0.005	0.003	0.002

Table B.18 Drug release curve of dimenhydrinate liquid filled capsule F2

Time	Absorbance				Amount release (mcg)				Av.	SD
(minutes)	1	2	3	4	1	2	3	4		
0	0	0	0	0	0	0	0	0	0	0
5	0.388	0.204	0.345	0.097	0.065	0.034	0.058	0.003	0.032	0.027
10	0.897	0.666	1.464	0.084	0.151	0.112	0.246	0.003	0.120	0.122
15	1.136	1.208	1.232	0.039	0.191	0.203	0.207	0.001	0.137	0.118
30	0.8753	0.7819	0.5291	0.01	0.147	0.131	0.089	0.000	0.074	0.067
45	0.4179	0.4255	0.2093	0.0056	0.014	0.014	0.007	0.000	0.007	0.007
60	0.433	0.0486	0.0363	0.005	0.015	0.002	0.001	0.000	0.001	0.001

Table B.19 Rheological data of mineral oil+5% Aerosil 200, determined by Rotoviscometer

	Sample 1					Sample 2					Sample 3				
Point	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{O}C)	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{O}C)	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{O}C)
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.194	42.31	94.15	2225	25.8	0.194	42.28	110	2602	25.9	0.194	42.27	85.7	2027	26.2
2	0.396	86.56	130.4	1507	25.9	0.396	86.71	141.6	1633	26	0.398	86.71	115.3	1330	26.2
3	0.597	131.4	157.5	1199	25.9	0.596	131.6	169.3	1287	26	0.598	131.5	141.6	1076	26.2
4	0.798	176.1	187	1062	25.9	0.797	176.2	197.9	1123	25.9	0.798	176.1	168.2	955.2	26.2
5	0.999	220.9	215.7	976.9	25.9	0.999	221.1	223.6	1011	26	0.998	221	194.2	848.8	26.1
6	1.193	265.7	245	922.2	25.9	1.193	265.7	249.3	938.1	25.9	1.199	265.8	219.5	826	26.2
7	1.394	310.4	272.8	878.9	25.9	1.394	310.6	274.9	885	26	1.393	310.5	244.6	787.7	26.2
8	1.597	355.1	301.6	849.3	25.8	1.596	353.7	298.6	844.4	26	1.595	355.2	269	757.5	26.2
9	1.797	399.8	327.7	819.5	25.9	1.796	398.5	323.5	811.7	26	1.796	398.5	292.2	733.2	26.2
10	1.998	442.9	355	801.5	25.9	1.997	443	346.8	782.7	26	1.997	443.2	315	710.7	26.2
11	2.193	401.8	332.3	827	25.8	2.199	401.7	324.9	808.8	26	2.2	401.9	295.4	735.2	26.2
12	2.394	357.8	309.5	866.5	25.9	2.398	357.4	305.2	853.9	26	2.399	357.6	275	769.1	26.2
13	2.594	312.8	285.2	911.7	25.9	2.6	314.2	283.5	902.3	26.1	2.594	313	253.5	809.9	26.2
14	2.796	269.6	261.1	968.3	25.9	2.794	269.5	260	964.7	26	2.796	269.8	231.8	856.2	26.2
15	2.998	225	233.8	1039	25.9	2.995	224.7	235	1046	26	2.996	225	207.6	933.8	26.2
16	3.199	180.2	205.3	1140	25.9	3.196	180	208.9	1160	26	3.197	180.2	182.6	1013	26.3
17	3.4	135.4	175.4	1296	25.9	3.397	135.2	181.5	1342	26.1	3.399	135.6	156.3	1153	26.3
18	3.595	90.62	142.6	1576	26	3.598	90.41	151.7	1678	26	3.593	90.7	127.5	1406	26.3
19	3.796	46.04	105.9	2301	25.9	3.8	45.75	117.4	2567	26.1	3.795	46.04	94.34	2049	26.2
20	3.993	2.247	47.66	21210	25.9	3.997	2.015	64.26	31880	26	3.998	2.226	42.76	19210	26.2

Table B.21 Rheological data of mineral oil, determined by Rotoviscometer

	Sample 1					Sample 2					Sample 3				
Point	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{o}C)	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{o}C)	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{o}C)
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.196	66.91	5.733	85.69	27	0.196	66.82	7.38	110.5	27	0.196	66.865	6.5565	98.095	26.9
2	0.396	136.9	15.04	109.8	26.9	0.396	136.8	17.14	125.3	26.9	0.396	136.85	16.09	117.55	26.9
3	0.593	206.5	23.78	115.2	27	0.593	208.8	25.4	121.7	27	0.593	207.65	24.59	118.45	27
4	0.799	268.6	32.22	119.9	26.9	0.799	268.6	33.15	123.4	26.9	0.799	268.6	32.685	121.65	27
5	1	268.7	32.31	120.2	26.9	1	268.5	33.09	123.2	27.1	1	268.6	32.7	121.7	27
6	1.194	268.6	31.87	118.6	26.9	1.194	268.5	33.15	123.4	27	1.194	268.55	32.51	121	27
7	1.394	268.6	32.07	119.4	29.9	1.394	268.5	33.2	123.7	27	1.394	268.55	32.635	121.55	27.1
8	1.595	298.6	32.19	119.8	27	1.595	268.4	33.49	124.8	27	1.595	283.5	32.84	122.3	27
9	1.795	268.6	32.28	120.1	27	1.795	268.4	33.44	124.6	27	1.795	268.5	32.86	122.35	27
10	1.996	268.5	32.39	120.6	27.1	1.996	268.5	33.38	124.3	27.1	1.996	268.5	32.885	122.45	27.1
11	2.2	268.6	32.16	119.7	27.1	2.2	268.5	33.81	126	27.1	2.2	268.55	32.985	122.85	27.1
12	2.398	268.7	32.13	119.6	26.9	2.398	268.5	33.9	126.3	26.9	2.398	268.6	33.015	122.95	26.9
13	2.599	268.6	32.33	120.4	26.9	2.599	268.5	33.84	126	27.1	2.599	268.55	33.085	123.2	27
14	2.799	268.6	32.39	120.6	27	2.799	268.4	33.7	125.5	27.1	2.799	268.5	33.045	123.05	27
15	3	268.6	32.42	120.7	27	3	268.5	33.58	125.1	27.1	3	268.55	33	122.9	27.1
16	3.194	268.6	32.33	120.4	27	3.194	268.4	33.99	126.6	27	3.194	268.5	33.16	123.5	27.1
17	3.399	212.1	25.2	118.8	27	3.399	212.1	26.22	123.6	27	3.399	212.1	25.71	121.2	27.1
18	3.594	144.1	17.29	120	27.1	3.594	142	18.24	129.4	27	3.594	143.05	17.765	124.7	27
19	3.799	72.23	8.552	119.4	27.1	3.799	73.33	9.483	129.3	27	3.799	72.78	9.0175	124.35	27
20	3.996	3.273	0	0	27.1	3.996	1.971	0	0	27	3.996	2.622	0	0	27

Table B.22 Rheological data of mineral oil+2.5% Aerosil 200, determined by Rotoviscometer

	Sample 1					Sample 2					Sample 3				
Point	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (°C)	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (°C)	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (°C)
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.194	42.36	46.37	1095	25.8	0.194	42.4	46.62	1110	25.9	0.194	42.43	48.39	1141	26.2
2	0.396	86.93	64.08	737.1	25.9	0.396	87.29	63.59	728.4	26	0.398	87.14	65.24	748.6	26.2
3	0.597	131.8	80	607	25.9	0.596	132.2	78.78	596	26	0.596	132.1	80.98	613.1	26.2
4	0.798	176.5	94.34	573.6	25.9	0.797	177	93.79	530	25.9	0.798	176.9	95.38	539.2	26.2
5	0.999	221.4	109.5	494.7	25.9	0.999	220.3	107.6	488.7	26	0.998	221.6	110	496.6	26.1
6	1.193	266.2	123.2	462.7	25.9	1.193	265.3	121	456.1	25.9	1.199	265.1	123.3	465.2	26.2
7	1.394	309.4	137	442.9	25.9	1.394	310.1	134.8	434.6	26	1.393	309.9	137.6	443.9	26.2
8	1.597	354.1	150.7	425.6	25.8	1.596	354.9	147.6	415.8	26	1.595	354.8	150.1	423.2	26.2
9	1.797	398.8	164.2	411.6	25.9	1.796	399.7	161	402.8	26	1.796	399.5	163.7	409.9	26.2
10	1.998	443.6	177.3	399.8	25.9	1.997	442.9	173.1	390.9	26	1.997	442.7	175.6	396.6	26.2
11	2.193	401.8	131.2	401.1	25.8	2.199	401.8	156.8	390.1	26	2.2	403.2	160.3	397.5	26.2
12	2.394	357.4	147.4	412.4	25.9	2.398	358.8	144.1	401.7	26	2.399	358.9	147.6	411.4	26.2
13	2.594	314.1	134.3	427.6	25.9	2.6	314.1	131.7	419.4	26.1	2.594	313.9	134.8	429.5	26.2
14	2.796	269.6	120.4	446.8	25.9	2.794	269.2	118.2	439.2	26	2.796	269	120.3	447.3	26.2
15	2.998	224.6	106.7	475.1	25.9	2.995	224.3	104.8	467.3	26	2.996	224.2	106.8	476.4	26.2
16	3.199	179.8	91.78	510.4	25.9	3.196	179.4	90.78	506.1	26	3.197	179.3	91.83	512.2	26.3
17	3.4	135	77.25	572.2	25.9	3.397	136	76.33	561.2	26.1	3.399	136	77.8	572	26.3
18	3.595	91.71	61.81	674	26	3.598	91.13	61.32	672.9	26	3.593	91.06	62.97	691.6	26.3
19	3.796	46.98	44.6	949.3	25.9	3.8	46.33	43.74	944.1	26.1	3.795	46.18	45.7	989.5	26.2
20	3.993	1.501	14.22	9552	25.9	3.997	2.269	17.34	7640	26	3.998	2.139	18.44	8621	26.2

Table B.23 Rheological data of MF+2.5% Tween80, determined by Rotoviscometer

	Sample 1					Sample 2					Sample 3				
Point	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{o}C)	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{o}C)	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{o}C)
1	0.194	94.83	48.77	514.3	26.1	0.194	94.83	48.73	513.5	26	0.194	94.83	48.75	513.8	26.1
2	0.396	194.7	76.42	392.6	26.1	0.396	194.6	76.48	393.3	26	0.396	194.7	76.44	392.9	26.1
3	0.597	295.3	102.9	348.3	26.1	0.597	295.2	102.1	346	26	0.597	295.3	102.5	347.1	26.1
4	0.798	395.8	128.9	325.4	26.1	0.798	395.5	128.5	324.6	26	0.798	395.8	128.7	325	26
5	0.999	443	139.2	313.9	26.1	0.999	443.5	138.8	313.3	26	0.999	443	139	313.5	26
6	1.193	443	139.2	313.9	26	1.193	443.5	139	313.7	26.1	1.193	443	139.1	313.8	26
7	1.394	443	139.2	313.9	26	1.394	443.5	138.8	313.3	26.1	1.394	443	139	313.5	26
8	1.597	443	139.6	314.8	26	1.597	443.5	139	313.7	26.1	1.597	443	139.3	314.3	26
9	1.797	443	139.2	313.9	26	1.797	443.5	139	313.7	26	1.797	443	139.1	313.8	26.1
10	1.998	443	139.2	313.3	26	1.998	443.5	139.2	314.2	26	1.998	443	139.2	313.8	26.1
11	2.193	443	139.2	313.9	26	2.193	443.5	139	313.7	26	2.193	443	139.1	313.8	26.1
12	2.394	443	139.2	313.9	26	2.394	443.5	139.2	314.2	26	2.394	443	139.2	314	26.1
13	2.594	443	139.2	313.9	26.1	2.594	443.6	139.2	314.2	26.1	2.594	443	139.2	314	26.1
14	2.796	443	139.4	314.3	26.1	2.796	443.5	139.2	313.7	26.1	2.796	443	139.3	314	26.1
15	2.998	443	139.2	313.9	26.1	2.998	443.6	139	314.2	26.1	2.998	443	139.1	314	26.1
16	3.199	405.1	127.9	315.5	26.2	3.199	404.3	128.1	315.9	26	3.199	405.1	128	315.5	26
17	3.4	304.2	101.5	333.3	26.1	3.4	303.9	102.4	335.9	26	3.4	304.2	101.95	334.5	26
18	3.595	203.6	74.87	367	26.1	3.595	203.4	75.41	369	26	3.595	203.6	75.14	368	26
19	3.796	102.9	46.57	450.1	26.1	3.796	102.9	16.99	452	26	3.796	102.9	31.78	451	26
20	3.993	4.828	10.38	1858	26.1	3.993	4.785	10.85	2771	26	3.993	4.828	10.615	2310	26.1

Table B.24 Rheological data of MF+5% Tween80, determined by Rotoviscometer

	Sample 1					Sample 2					Sample 3				
Point	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{o}C)	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{o}C)	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{o}C)
1	0.196	42.4	24.32	573.5	26.2	0.194	42.4	24.87	586.6	25.9	0.194	42.43	26.34	620.8	26.2
2	0.396	87.07	37.86	434.8	26.1	0.396	87.41	38.16	437.9	26	0.398	87.22	39.45	452.3	26.2
3	0.597	132	50.42	381.9	26.1	0.596	132.2	50.84	384.7	26	0.596	132.1	51.7	391.4	26.2
4	0.798	176.8	63.65	359.9	26.1	0.797	176.8	62.97	356.3	25.9	0.798	177	64.75	365.9	26.2
5	0.999	221.7	75.84	342.1	26.1	0.999	221.6	75.9	342.5	26	0.998	220.3	76.27	346.3	26.1
6	1.193	265	87.23	329.1	26	1.193	265.1	87.23	329.1	25.9	1.199	265.2	88.33	333.1	26.2
7	1.394	309.9	98.24	320.3	26	1.394	309.9	98.69	318.5	26	1.393	310.1	99.79	321.8	26.2
8	1.597	354.7	110.9	312.7	26	1.596	354.8	110.3	310.8	26	1.595	354.9	111.6	314.5	26.2
9	1.797	399.5	122.3	306.2	26	1.796	399.5	122.3	306.2	26	1.796	399.5	123.1	308.2	26.2
10	1.998	442.7	132.9	300.1	26	1.997	442.7	132.9	300.1	26	1.997	442.6	134	302.6	26.2
11	2.193	403.1	118.9	295	26	2.199	403.1	118.7	294.4	26	2.2	403.2	120	297.7	26.2
12	2.394	358.7	107.3	299	26	2.398	358.7	107.3	299	26	2.399	358.8	108.3	301.9	26.2
13	2.594	313.9	95.87	305.4	26.1	2.6	303.9	95.96	304.4	26.1	2.594	314	97.03	309	26.2
14	2.796	269.4	83.8	311.4	26.1	2.794	269	84.41	313.8	26	2.796	269	85.88	319.2	26.2
15	2.998	224.3	72.22	322	26.1	2.995	224.1	71.92	320.9		2.996	224.2	73.33	327.1	26.2
16	3.199	179.4	59.73	333	26.2	3.196	180.6	59.91	331.7	26	3.197	180.7	61.01	337.6	26.3
17	3.4	136.2	46.86	344	26.2	3.397	135.8	48.27	355.5	26.1	3.399	135.9	49.25	362.5	26.3
18	3.595	91.35	35.53	388.9	26.2	3.598	90.99	34.98	384.4	26	3.593	90.99	26.45	400.6	26.3
19	3.796	46.62	21.56	462.6	26.2	3.8	46.11	21.56	467.6	26.1	3.795	46.18	21.93	474.9	26.2
20	3.993	3.465	2.94	1193	26.2	3.997	3.03	1.96	965.7	26	3.998	2.124	2.512	1182	26.2

Table B.25 Rheological data of MF+10% Tween80, determined by Rotoviscometer

	Sample 1					Sample 2					Sample 3				
Point	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{O}C)	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{O}C)	Time (min)	D(1/s)	Tau (Pa)	Eta (mPa)	Temp (^{O}C)
1	0.193	94.83	37.17	392.6	26.5	0.193	94.75	30.57	322.1	26.7	0.193	94.83	33.87	357.4	26.9
2	0.395	194.6	63.74	327.4	26.5	0.395	195.9	55.986	287.8	26.7	0.395	194.7	59.863	307.6	26.9
3	0.595	295.2	88.81	300.8	26.5	0.595	296.9	80.42	272.6	26.7	0.595	295.3	84.615	286.7	26.9
4	0.796	395.5	114.5	289.5	26.5	0.796	395.9	108.2	268.5	26.7	0.796	395.8	110.35	279	26.8
5	0.997	443.5	124.6	281.1	26.6	0.997	494.9	116.9	263.8	26.7	0.997	443	120.75	272.4	26.8
6	1.197	443.5	124.2	280.2	26.6	1.197	594.7	116.9	263.8	26.8	1.197	443	120.55	272	26.9
7	1.399	443.5	123.8	279.2	26.6	1.399	695	117.1	264.3	26.8	1.399	443	120.45	271.8	26.9
8	1.599	443.5	123.8	279.2	26.6	1.599	795.7	117.1	264.2	26.8	1.599	443	120.45	271.7	26.9
9	1.793	443.5	123.2	277.9	26.7	1.793	896.2	117.3	264.7	26.8	1.793	443	120.25	271.3	26.9
10	1.995	443.5	123	277.4	26.7	1.995	997.7	117.6	265.4	26.7	1.995	443	120.3	271.4	26.8
11	2.2	443.5	122.6	276.5	26.6	2.2	902.6	117.5	265.4	26.7	2.2	443	120.05	271	26.9
12	2.398	443.5	122.2	275.6	26.6	2.398	805	117.5	265.3	26.7	2.398	443	119.85	271	26.9
13	2.6	443.6	122.2	275.6	26.5	2.6	703.8	117.8	265.8	26.7	2.6	443	120	271.5	26.9
14	2.794	443.5	121.6	274.2	26.5	2.794	604.4	117.7	265.6	26.7	2.794	443	119.65	270	26.9
15	2.994	443.6	121.4	273.8	26.5	2.994	504.1	117.7	265.6	26.7	2.994	443	119.55	270	26.9
16	3.196	404.3	110.2	272.3	26.5	3.196	406	106.1	263.3	26.7	3.196	405.1	108.15	268	26.8
17	3.396	303.9	84.42	277.6	26.5	3.396	306.2	79.68	263.2	26.6	3.396	304.2	82.05	270	26.8
18	3.597	203.4	58.61	287.7	26.5	3.597	206.3	54.77	266.4	26.6	3.597	203.8	56.69	277.5	26.9
19	3.798	102.9	32.22	312.6	26.6	3.798	104	29.03	276.3	26.6	3.798	102.9	30.625	294.5	26.9
20	3.995	4.785	2.808	555.7	26.6	3.995	3.563	0.081	22.123	26.6	3.995	4.828	1.4445	288	26.9

Table B.26 Analysis report of particle size distribution of formula 1

Result: Analysis Report

Sample Details

Sample ID: sample4 | Run Number: 7 | Measurement Date: Mon, Apr 26, 1999 10:22AM
Sample File: PEERACHA | Record Number: 24 | Analysis Date: Mon, Apr 26, 1999 10:22AM
Sample Path: A:\ | Result Source: Analysed
Sample Notes: Test by Pranee : Scientific and Technological Research Equipment Centre Chulalongkorn University,
Liquid medium : WATER

System Details

Range Lens: 300RF mm | Beam Length: 2.40 mm | Sampler: MS17 | Obscuration: 20.6 %
Presentation: 3OHD | [Particle R.I. = (1.5295, 0.1000); Dispersant R.I. = 1.3300]
Analysis Model: Polydisperse | Residual: 0.252 %
Modifications: Active -- | Killed Data Channels: Low 0; High 2

Result Statistics

Distribution Type: Volume | Concentration = 0.0871 %Vol | Density = 1.000 g / cub. cm | Specific S.A. = 0.3149 sq. m / g
Mean Diameters:
D [4, 3] = 152.82 um | D [3, 2] = 19.05 um | Span = 3.154E+00 | Uniformity = 1.040E+00 | D (v, 0.1) = 12.76 um | D (v, 0.5) = 110.82 um | D (v, 0.9) = 362.23 um

Size_Low (um)	In %	Size_High (um)	Under%
0.05	0.00	0.06	0.00
0.06	0.00	0.07	0.00
0.07	0.00	0.08	0.00
0.08	0.00	0.09	0.00
0.09	0.00	0.11	0.00
0.11	0.00	0.13	0.00
0.13	0.00	0.15	0.00
0.15	0.00	0.17	0.00
0.17	0.00	0.20	0.00
0.20	0.00	0.23	0.00
0.23	0.01	0.27	0.01
0.27	0.03	0.31	0.04
0.31	0.05	0.36	0.09
0.36	0.06	0.42	0.15
0.42	0.08	0.49	0.23
0.49	0.11	0.58	0.35
0.58	0.14	0.67	0.48
0.67	0.17	0.78	0.65
0.78	0.19	0.91	0.85
0.91	0.22	1.06	1.07
1.06	0.25	1.24	1.32
1.24	0.26	1.44	1.58
1.44	0.26	1.68	1.84
1.68	0.25	1.95	2.10
1.95	0.25	2.28	2.35
2.28	0.24	2.65	2.59
2.65	0.25	3.09	2.84
3.09	0.28	3.60	3.12
3.60	0.32	4.19	3.44
4.19	0.39	4.88	3.83
4.88	0.48	5.69	4.31
5.69	0.61	6.63	4.92
6.63	0.77	7.72	5.69
7.72	0.96	9.00	6.67
9.00	1.24	10.48	7.91
10.48	1.57	12.21	9.48
12.21	1.94	14.22	11.42
14.22	2.35	16.57	13.77
16.57	2.76	19.31	16.54
19.31	3.11	22.49	19.64
22.49	3.33	26.20	22.97
26.20	3.39	30.53	26.36
30.53	3.29	35.56	29.85
35.56	3.06	41.43	32.71
41.43	2.79	48.27	35.50
48.27	2.55	56.23	38.05
56.23	2.41	65.51	40.47
65.51	2.42	76.32	42.89
76.32	2.62	88.91	45.51
88.91	3.00	103.58	48.51
103.58	3.54	120.67	52.05
120.67	4.20	140.58	56.25
140.58	4.87	163.77	61.13
163.77	5.51	190.80	66.64
190.80	6.08	222.28	72.72
222.28	6.02	258.95	78.75
258.95	5.58	301.68	84.33
301.68	4.83	351.46	89.16
351.46	3.89	409.45	93.05
409.45	2.91	477.01	95.96
477.01	2.03	555.71	97.99
555.71	1.35	647.41	99.34
647.41	0.66	754.23	100.00
754.23	0.00	878.67	100.00

Formula 1 : Dimenhydrinate+2.5% Aerosil 200+ mineral oil

Table B.27 Analysis report of particle size distribution of formula 2

Result: Analysis Report

Sample Details

Sample ID: sample2
Sample File: PEERACHA
Sample Path: A:\
Sample Notes: Test by Pranee : Scientific and Technological Research Equipment Centre Chulalongkorn University. Liquid medium : WATER

Run Number: 3
Record Number: 8

Measurement Date: Mon, Apr 26, 1999 10:06AM
Analysis Date: Mon, Apr 26, 1999 10:06AM
Result Source: Analysed

System Details

Range Lens: 300RF mm
Presentation: 3OHD
Analysis Model: Polydisperse
Modifications: Active --

Beam Length: 2.40 mm
[Particle R.I. = (1.5295, 0.1000); Dispersant R.I. = 1.3300]
Killed Data Channels: Low 0; High 2

Sampler: MS17

Obscuration: 31.4 %
Residual: 0.277 %

Result Statistics

Distribution Type: Volume
Mean Diameters:
D [4, 3] = 122.92 um

Concentration = 0.0850 %Vol
D (v, 0.1) = 5.76 um
D [3, 2] = 11.34 um

Density = 1.000 g / cub. cm
D (v, 0.5) = 120.64 um
Span = 2.027E+00

Specific S.A. = 0.5290 sq. m / g
D (v, 0.9) = 250.29 um
Uniformity = 6.488E-01

Size_Low (um)	In %	Size_High (um)	Under%
0.05	0.00	0.06	0.00
0.06	0.00	0.07	0.00
0.07	0.00	0.08	0.00
0.08	0.00	0.09	0.00
0.09	0.00	0.11	0.00
0.11	0.00	0.13	0.00
0.13	0.00	0.15	0.00
0.15	0.00	0.17	0.00
0.17	0.00	0.20	0.00
0.20	0.00	0.23	0.00
0.23	0.02	0.27	0.02
0.27	0.05	0.31	0.07
0.31	0.08	0.36	0.16
0.36	0.10	0.42	0.26
0.42	0.14	0.49	0.39
0.49	0.21	0.58	0.61
0.58	0.26	0.67	0.88
0.67	0.35	0.78	1.22
0.78	0.43	0.91	1.64
0.91	0.54	1.06	2.18
1.06	0.66	1.24	2.85
1.24	0.77	1.44	3.62
1.44	0.82	1.68	4.43
1.68	0.79	1.95	5.23
1.95	0.74	2.28	5.97
2.28	0.67	2.65	6.64
2.65	0.63	3.09	7.27
3.09	0.61	3.60	7.88
3.60	0.63	4.19	8.51
4.19	0.68	4.88	9.19
4.88	0.75	5.69	9.94
5.69	0.83	6.63	10.77
6.63	0.93	7.72	11.69
7.72	1.04	9.00	12.73
9.00	1.16	10.48	13.89
10.48	1.29	12.21	15.18
12.21	1.44	14.22	16.62
14.22	1.59	16.57	18.21
16.57	1.72	19.31	19.92
19.31	1.79	22.49	21.71
22.49	1.79	26.20	23.51
26.20	1.72	30.53	25.23
30.53	1.80	35.56	26.83
35.56	1.49	41.43	28.32
41.43	1.46	48.27	29.80
48.27	1.62	56.23	31.41
56.23	1.96	65.51	33.37
65.51	2.54	76.32	35.91
76.32	3.42	88.91	39.33
88.91	4.61	103.58	43.94
103.58	6.08	120.67	50.01
120.67	7.72	140.58	57.73
140.58	9.25	163.77	66.98
163.77	9.36	190.80	76.34
190.80	8.36	222.28	84.70
222.28	6.60	258.95	91.31
258.95	4.61	301.68	95.91
301.68	2.77	351.46	98.69
351.46	1.31	409.45	100.00
409.45	0.00	477.01	100.00
477.01	0.00	555.71	100.00
555.71	0.00	647.41	100.00
647.41	0.00	754.23	100.00
754.23	0.00	878.67	100.00

Formula 2 : Dimenhydrinate+2.5% Aerosil 200+ mineral oil+2.5% Tween80

Table B.28 Analysis report of particle size distribution of formula 3

Result: Analysis Report

Sample Details

Sample ID: sample1 | Run Number: 5 | Measurement Date: Mon, Apr 26, 1999 10:01AM
Sample File: PEERACHA | Record Number: 5 | Analysis Date: Mon, Apr 26, 1999 10:01AM
Sample Path: A:\ | Result Source: Analysed
Sample Notes: Test by Pranee : Scientific and Technological Research Equipment Centre Chulalongkorn University. Liquid medium : WATER

System Details

Range Lens: 300RF mm | Beam Length: 2.40 mm | Sampler: MS17 | Obscuration: 27.5 %
Presentation: 3OHD | [Particle R.I. = (1.5295, 0.1000); Dispersant R.I. = 1.3300] | Residual: 0.271 %
Analysis Model: Polydisperse
Modifications: Active – | Killed Data Channels: Low 0; High 2

Result Statistics

Distribution Type: Volume | Concentration = 0.0413 %Vol | Density = 1.000 g / cub. cm | Specific S.A. = 0.7292 sq. m / g
Mean Diameters: | D (v, 0.1) = 2.99 um | D (v, 0.5) = 85.47 um | D (v, 0.9) = 226.87 um
D [4, 3] = 100.69 um | D [3, 2] = 8.23 um | Span = 2.617E+00 | Uniformity = 8.691E-01

Size_Low (um)	In %	Size_High (um)	Under%
0.05	0.00	0.06	0.00
0.06	0.00	0.07	0.00
0.07	0.00	0.08	0.00
0.08	0.00	0.09	0.00
0.09	0.00	0.11	0.00
0.11	0.00	0.13	0.00
0.13	0.00	0.15	0.00
0.15	0.00	0.17	0.01
0.17	0.01	0.20	0.01
0.20	0.02	0.23	0.03
0.23	0.05	0.27	0.08
0.27	0.10	0.31	0.18
0.31	0.13	0.36	0.31
0.36	0.15	0.42	0.46
0.42	0.20	0.49	0.65
0.49	0.28	0.58	0.93
0.58	0.35	0.67	1.28
0.67	0.47	0.78	1.74
0.78	0.59	0.91	2.33
0.91	0.74	1.06	3.07
1.06	0.90	1.24	3.96
1.24	1.04	1.44	5.01
1.44	1.12	1.68	6.12
1.68	1.12	1.95	7.24
1.95	1.06	2.28	8.30
2.28	0.97	2.65	9.28
2.65	0.91	3.09	10.19
3.09	0.87	3.60	11.06
3.60	0.87	4.19	11.93
4.19	0.90	4.88	12.83
4.88	0.96	5.69	13.80
5.69	1.05	6.63	14.85
6.63	1.15	7.72	16.00
7.72	1.29	9.00	17.29
9.00	1.44	10.48	18.73
10.48	1.62	12.21	20.34
12.21	1.81	14.22	22.15
14.22	2.00	16.57	24.15
16.57	2.16	19.31	26.31
19.31	2.24	22.49	28.55
22.49	2.24	26.20	30.79
26.20	2.16	30.53	32.95
30.53	2.05	35.56	35.00
35.56	1.97	41.43	36.97
41.43	2.00	48.27	38.97
48.27	2.21	56.23	41.18
56.23	2.62	65.51	43.79
65.51	3.25	76.32	47.04
76.32	4.11	88.91	51.15
88.91	5.13	103.58	56.28
103.58	6.23	120.67	62.51
120.67	7.28	140.58	69.79
140.58	7.34	163.77	77.12
163.77	6.69	190.80	83.82
190.80	5.57	222.28	89.39
222.28	4.24	258.95	93.62
258.95	2.96	301.68	96.58
301.68	1.87	351.46	98.45
351.46	1.05	409.45	99.51
409.45	0.49	477.01	100.00
477.01	0.00	555.71	100.00
555.71	0.00	647.41	100.00
647.41	0.00	754.23	100.00
754.23	0.00	878.67	100.00

Formula 3 : Dimenhydrinate+2.5% Aerosil 200+ mineral oil+5% Tween80

Table B.29 Analysis report of particle size distribution of formula 4

Result: Analysis Report

Sample Details

Sample ID: sample3 | Run Number: 7 | Measurement Date: Mon, Apr 26, 1999 10:13AM
Sample File: PEERACHA | Record Number: 16 | Analysis Date: Mon, Apr 26, 1999 10:14AM
Sample Path: A:\ | Result Source: Analysed
Sample Notes: Test by Pranee : Scientific and Technological Research Equipment Centre Chulalongkorn University.
Liquid medium : WATER

System Details

Range Lens: 300RF mm | Beam Length: 2.40 mm | Sampler: MS17 | Obscuration: 36.4 %
Presentation: 3OHD | [Particle R.I. = (1.5295, 0.1000); Dispersant R.I. = 1.3300] | Residual: 0.404 %
Analysis Model: Polydisperse
Modifications: Active – | Killed Data Channels: Low 0; High 2

Result Statistics

Distribution Type: Volume | Concentration = 0.0929 %Vol | Density = 1.000 g / cub. cm | Specific S.A. = 0.4911 sq. m / g
Mean Diameters: | D (v, 0.1) = 9.51 um | D (v, 0.5) = 75.38 um | D (v, 0.9) = 151.16 um
D [4, 3] = 78.56 um | D [3, 2] = 12.22 um | Span = 1.879E+00 | Uniformity = 5.838E-01

Size_Low (um)	In %	Size_High (um)	Under%
0.05	0.00	0.06	0.00
0.06	0.00	0.07	0.00
0.07	0.00	0.08	0.00
0.08	0.00	0.09	0.00
0.09	0.00	0.11	0.00
0.11	0.00	0.13	0.00
0.13	0.00	0.15	0.00
0.15	0.00	0.17	0.01
0.17	0.01	0.20	0.01
0.20	0.02	0.23	0.04
0.23	0.05	0.27	0.09
0.27	0.10	0.31	0.19
0.31	0.12	0.36	0.31
0.36	0.13	0.42	0.44
0.42	0.16	0.49	0.60
0.49	0.21	0.58	0.81
0.58	0.24	0.67	1.05
0.67	0.29	0.78	1.34
0.78	0.33	0.91	1.67
0.91	0.38	1.06	2.05
1.06	0.43	1.24	2.48
1.24	0.47	1.44	2.95
1.44	0.49	1.68	3.44
1.68	0.49	1.95	3.93
1.95	0.46	2.28	4.39
2.28	0.43	2.65	4.82
2.65	0.40	3.09	5.22
3.09	0.39	3.60	5.61
3.60	0.41	4.19	6.01
4.19	0.46	4.88	6.47
4.88	0.55	5.69	7.02
5.69	0.68	6.63	7.70
6.63	0.84	7.72	8.53
7.72	1.03	9.00	9.57
9.00	1.25	10.48	10.81
10.48	1.46	12.21	12.28
12.21	1.65	14.22	13.93
14.22	1.80	16.57	15.73
16.57	1.89	19.31	17.62
19.31	1.93	22.49	19.55
22.49	1.99	26.20	21.54
26.20	2.12	30.53	23.66
30.53	2.41	35.56	26.06
35.56	2.90	41.43	28.97
41.43	3.68	48.27	32.62
48.27	4.68	56.23	37.30
56.23	5.95	65.51	43.25
65.51	7.39	76.32	50.64
76.32	8.83	88.91	59.47
88.91	10.05	103.58	69.52
103.58	9.51	120.67	79.03
120.67	7.93	140.58	86.96
140.58	5.85	163.77	92.81
163.77	3.86	190.80	96.67
190.80	2.25	222.28	98.92
222.28	1.08	258.95	100.00
258.95	0.00	301.68	100.00
301.68	0.00	351.46	100.00
351.46	0.00	409.45	100.00
409.45	0.00	477.01	100.00
477.01	0.00	555.71	100.00
555.71	0.00	647.41	100.00
647.41	0.00	754.23	100.00
754.23	0.00	878.67	100.00

Formula 4 : Dimenhydrinate+2.5% Aerosil 200+ mineral oil+10% Tween80

Table B.30 Analysis report of particle size distribution of formula 5

Result: Analysis Report

Sample Details

Sample ID: sample5
Sample File: PEERACHA
Sample Path: A:\
Sample Notes: Test by Pranee : Scientific and Technological Research Equipment Centre Chulalongkorn University. Liquid medium : WATER

Run Number: 8
Record Number: 33

Measurement Date: Mon, Apr 26, 1999 11:04AM
Analysis Data: Mon, Apr 26, 1999 11:04AM
Result Source: Analysed

System Details

Range Lens: 300RF mm
Presentation: 3OHD
Analysis Model: Polydisperse
Modifications: Active --

Beam Length: 2.40 mm
[Particle R.I. = (1.5295, 0.1000); Dispersant R.I. = 1.3300]
Killed Data Channels: Low 0; High 2

Sampler: MS17

Obscuration: 40.1 %
Residual: 0.349 %

Result Statistics

Distribution Type: Volume
Mean Diameters:
D [4, 3] = 84.07 um

Concentration = 0.0942 %Vol
D (v, 0.1) = 8.40 um
D [3, 2] = 11.12 um

Density = 1.000 g / cub. cm
D (v, 0.5) = 76.52 um
Span = 1.831E+00

Specific S.A. = 0.5395 sq. m / g
D (v, 0.9) = 148.48 um
Uniformity = 5.829E-01

Size_Low (um)	In %	Size_High (um)	Under%
0.05	0.00	0.06	0.00
0.06	0.00	0.07	0.00
0.07	0.00	0.08	0.00
0.08	0.00	0.09	0.00
0.09	0.00	0.11	0.00
0.11	0.00	0.13	0.00
0.13	0.00	0.15	0.00
0.15	0.00	0.17	0.00
0.17	0.00	0.20	0.00
0.20	0.01	0.23	0.01
0.23	0.03	0.27	0.03
0.27	0.08	0.31	0.11
0.31	0.12	0.36	0.23
0.36	0.15	0.42	0.39
0.42	0.21	0.49	0.59
0.49	0.30	0.58	0.89
0.58	0.35	0.67	1.24
0.67	0.44	0.78	1.67
0.78	0.49	0.91	2.16
0.91	0.56	1.06	2.72
1.06	0.61	1.24	3.33
1.24	0.64	1.44	3.97
1.44	0.62	1.68	4.59
1.68	0.57	1.95	5.17
1.95	0.51	2.28	5.67
2.28	0.44	2.65	6.11
2.65	0.40	3.09	6.51
3.09	0.38	3.60	6.89
3.60	0.40	4.19	7.29
4.19	0.45	4.88	7.74
4.88	0.52	5.69	8.26
5.69	0.61	6.63	8.87
6.63	0.70	7.72	9.58
7.72	0.79	9.00	10.37
9.00	0.85	10.48	11.22
10.48	0.89	12.21	12.11
12.21	0.89	14.22	12.99
14.22	0.86	16.57	13.86
16.57	0.85	19.31	14.71
19.31	0.90	22.49	15.61
22.49	1.08	26.20	16.70
26.20	1.44	30.53	18.14
30.53	2.03	35.56	20.17
35.56	2.88	41.43	23.05
41.43	4.08	48.27	27.13
48.27	5.65	56.23	32.78
56.23	7.55	65.51	40.33
65.51	9.49	76.32	49.82
76.32	11.13	88.91	60.95
88.91	10.77	103.58	71.71
103.58	9.20	120.67	80.91
120.67	7.09	140.58	88.00
140.58	4.93	163.77	92.93
163.77	3.11	190.80	96.05
190.80	1.75	222.28	97.79
222.28	0.82	258.95	98.61
258.95	0.29	301.68	98.90
301.68	0.08	351.46	98.99
351.46	0.08	409.45	99.07
409.45	0.17	477.01	99.24
477.01	0.24	555.71	99.47
555.71	0.24	647.41	99.72
647.41	0.19	754.23	99.90
754.23	0.10	878.67	100.00

Formula 5 : Dimenhydrinate+2.5% Aerosil 200+ mineral oil+5% Tween80+10%dextrose

Table B.31 Analysis report of particle size distribution of formula 6

Result: Analysis Report

Sample Details

Sample ID: sample6
Sample File: PEERACHA
Sample Path: A:\
Sample Notes: Test by Pranee : Scientific and Technological Research Equipment Centre Chulalongkorn University. Liquid medium : WATER

Run Number: 4
Record Number: 38

Measurement Date: Mon, Apr 26, 1999 11:10AM
Analysis Date: Mon, Apr 26, 1999 11:10AM
Result Source: Analysed

System Details

Range Lens: 300RF mm
Presentation: 3OHD
Analysis Model: Polydisperse
Modifications: Active --

Beam Length: 2.40 mm
[Particle R.I. = (1.5295, 0.1000); Dispersant R.I. = 1.3300]
Killed Data Channels: Low 0; High 2

Sampler: MS17

Obscuration: 40.3 %
Residual: 0.315 %

Result Statistics

Distribution Type: Volume
Mean Diameters:
D [4, 3] = 83.96 um

Concentration = 0.0820 %Vol
D (v, 0.1) = 5.87 um
D [3, 2] = 9.68 um

Density = 1.000 g / cub. cm
D (v, 0.5) = 76.02 um
Span = 2.153E+00

Specific S.A. = 0.6198 sq. m / g
D (v, 0.9) = 173.83 um
Uniformity = 6.917E-01

Size_Low (um)	In %	Size_High (um)	Under%	Size_Low (um)	In %	Size_High (um)	Under%
0.05	0.00	0.06	0.00	6.63	1.19	7.72	12.01
0.06	0.00	0.07	0.00	7.72	1.37	9.00	13.39
0.07	0.00	0.08	0.00	9.00	1.55	10.48	14.94
0.08	0.00	0.09	0.00	10.48	1.72	12.21	16.66
0.09	0.00	0.11	0.00	12.21	1.86	14.22	18.52
0.11	0.00	0.13	0.00	14.22	1.97	16.57	20.50
0.13	0.00	0.15	0.00	16.57	2.04	19.31	22.54
0.15	0.00	0.17	0.00	19.31	2.06	22.49	24.60
0.17	0.00	0.20	0.00	22.49	2.05	26.20	26.64
0.20	0.00	0.23	0.00	26.20	2.06	30.53	28.71
0.23	0.03	0.27	0.03	30.53	2.15	35.56	30.86
0.27	0.08	0.31	0.12	35.56	2.37	41.43	33.23
0.31	0.14	0.36	0.26	41.43	2.79	48.27	36.02
0.36	0.17	0.42	0.43	48.27	3.42	56.23	39.44
0.42	0.24	0.49	0.67	56.23	4.29	65.51	43.73
0.49	0.34	0.58	1.00	65.51	5.39	76.32	49.11
0.58	0.39	0.67	1.39	76.32	6.63	88.91	55.74
0.67	0.49	0.78	1.88	88.91	7.84	103.58	63.58
0.78	0.54	0.91	2.42	103.58	8.80	120.67	72.38
0.91	0.61	1.06	3.02	120.67	8.35	140.58	80.72
1.06	0.86	1.24	3.88	140.58	7.01	163.77	87.73
1.24	0.87	1.44	4.35	163.77	5.29	190.80	93.03
1.44	0.64	1.68	5.00	190.80	3.62	222.28	96.64
1.68	0.60	1.95	5.59	222.28	2.20	258.95	98.84
1.95	0.55	2.28	6.14	258.95	1.12	301.68	99.96
2.28	0.50	2.65	6.64	301.68	0.04	351.46	100.00
2.65	0.50	3.09	7.14	351.46	0.00	409.45	100.00
3.09	0.52	3.60	7.67	409.45	0.00	477.01	100.00
3.60	0.59	4.19	8.26	477.01	0.00	555.71	100.00
4.19	0.70	4.88	8.96	555.71	0.00	647.41	100.00
4.88	0.85	5.69	9.81	647.41	0.00	754.23	100.00
5.69	1.01	6.63	10.82	754.23	0.00	878.67	100.00

Formula 6 : Dimenhydrinate+2.5% Aerosil 200+ mineral oil+2.5% CremophorRH40

Table B.32 Analysis report of particle size distribution of formula 7

Result: Analysis Report

Sample Details

Sample ID: Sample 7
Sample File: PEERACHA
Sample Path: A:\
Sample Notes:

Run Number: 6
Record Number: 44

Measurement Date: Mon, Apr 26, 1999 1:27PM
Analysis Date: Mon, Apr 26, 1999 1:27PM
Result Source: Analysed

System Details

Range Lens: 300RF mm
Presentation: 3OHD
Analysis Model: Polydisperse
Modifications: Active --

Beam Length: 2.40 mm
[Particle R.I. = (1.5295, 0.1000); Dispersant R.I. = 1.3300]
Killed Data Channels: Low 0; High 2

Sampler: MS17

Obscuration: 38.0 %
Residual: 0.321 %

Result Statistics

Distribution Type: Volume
Mean Diameters:
D [4, 3] = 92.64 um

Concentration = 0.0927 %Vol
D (v, 0.1) = 8.48 um
D [3, 2] = 11.81 um

Density = 1.000 g / cub. cm
D (v, 0.5) = 86.46 um
Span = 1.991E+00

Specific S.A. = 0.5079 sq. m / g
D (v, 0.9) = 180.63 um
Uniformity = 6.040E-01

Size_Low (um)	In %	Size_High (um)	Under%
0.05	0.00	0.06	0.00
0.06	0.00	0.07	0.00
0.07	0.00	0.08	0.00
0.08	0.00	0.09	0.00
0.09	0.00	0.11	0.00
0.11	0.00	0.13	0.00
0.13	0.00	0.15	0.00
0.15	0.00	0.17	0.00
0.17	0.00	0.20	0.00
0.20	0.00	0.23	0.00
0.23	0.02	0.27	0.02
0.27	0.06	0.31	0.09
0.31	0.11	0.36	0.20
0.36	0.14	0.42	0.34
0.42	0.20	0.49	0.53
0.49	0.28	0.58	0.81
0.58	0.33	0.67	1.14
0.67	0.41	0.78	1.55
0.78	0.45	0.91	2.00
0.91	0.51	1.06	2.51
1.06	0.54	1.24	3.05
1.24	0.55	1.44	3.60
1.44	0.53	1.68	4.13
1.68	0.49	1.95	4.61
1.95	0.44	2.28	5.06
2.28	0.40	2.65	5.46
2.65	0.39	3.09	5.84
3.09	0.39	3.60	6.24
3.60	0.44	4.19	6.67
4.19	0.51	4.88	7.18
4.88	0.61	5.69	7.79
5.69	0.73	6.63	8.52
6.63	0.87	7.72	9.39
7.72	1.01	9.00	10.40
9.00	1.14	10.48	11.54
10.48	1.25	12.21	12.79
12.21	1.33	14.22	14.12
14.22	1.36	16.57	15.48
16.57	1.35	19.31	16.82
19.31	1.31	22.49	18.14
22.49	1.32	26.20	19.46
26.20	1.42	30.53	20.87
30.53	1.68	35.56	22.55
35.56	2.14	41.43	24.69
41.43	2.87	48.27	27.56
48.27	3.89	56.23	31.45
56.23	5.21	65.51	36.66
65.51	6.73	76.32	43.40
76.32	8.19	88.91	51.58
88.91	9.24	103.58	60.82
103.58	9.79	120.67	70.61
120.67	8.72	140.58	79.33
140.58	7.07	163.77	86.40
163.77	5.32	190.80	91.71
190.80	3.74	222.28	95.45
222.28	2.43	258.95	97.87
258.95	1.42	301.68	99.29
301.68	0.71	351.46	100.00
351.46	0.00	409.45	100.00
409.45	0.00	477.01	100.00
477.01	0.00	555.71	100.00
555.71	0.00	647.41	100.00
647.41	0.00	754.23	100.00
754.23	0.00	878.67	100.00

Formula 7 : Dimenhydrinate+2.5% Aerosil 200+ mineral oil+5% CremophorRH40

Table B.33 Leakage time of liquid mixture

Sample number	Time(days)															
	Rx1	Rx2	Rx3	Rx4	Rx5	Rx6	Rx7	Rx8	Rx9	Rx10	Rx11	Rx12	Rx13	Rx14	Rx15	Rx16
1	30	30	24	30	6	18	18	30	30	18	18	30	30	30	30	30
2	12	30	18	6	24	18	18	30	30	30	30	30	30	30	30	30
3	30	18	6	6	30	14	18	18	24	18	18	30	30	30	30	30
4	16	18	30	30	24	30	18	24	30	30	30	30	30	30	12	30
5	30	30	30	30	30	24	18	18	18	18	30	30	24	30	24	30
Averg.	23.6	25.2	21.6	20.4	22.8	20.8	18	24	26.4	22.8	25.2	30	28.8	30	25.2	30

Table B.34 Surface tension of liquid mixture, recorded by Cenco.DuNouy ring tensiometer

Formula	surface tension(Dynes/cm)					Average	S.D.
	1	2	3	4	5		
Mineral oil	45.5	45.2	46.35	44.7	44.1	45.17	0.85
Dimen in MO	47	46.9	45.9	47.1	45.3	46.44	0.80
2.5%T80 in MO	44.3	44.5	45.4	45.3	44.6	44.82	0.497
5%T80 in MO	46.7	46.5	46.9	47.5	46.4	46.8	0.436
10%T80 in MO	46.4	47.2	47.7	47.3	46.2	45.17	0.635
Dimen in 5%T80 in MO	47.9	47.3	45.6	44.8	45.7	46.26	1.29
2.5%A200 in MO	48.1	45.9	47.6	45.4	45.6	46.52	1.24
5%A200 in MO	46.8	48.2	47.5	46.5	47.1	47.22	0.662
2.5%T80 in MF	44.5	43.7	45.8	43.8	43.4	44.24	0.961
5%T80 in MF	45.9	46	47.2	46.5	46.2	46.36	0.522
10%T80 in MF	44.6	45.2	46.7	45.4	45.9	45.56	0.789

Appendix C

Table C.1 Thickness of peeled-capsule cellulosic film,coated with fluid bed coater

formula	Thickness(micron)										Average	S.D.
	1	2	3	4	5	6	7	8	9	10	thickness	
1A	75	78	75	85	75	80	70	80	78	75	77.1	4.07
2A	75	82	80	75	80	81	85	75	75	78	78.6	3.57
3A	70	72	72	68	70	65	65	70	68	70	69	2.49
4A	75	82	75	80	76	74	74	75	75	79	76.5	2.80
5A	70	75	70	72	72	68	70	68	70	75	71	2.49
6A	78	85	85	80	85	80	75	75	80	85	80.8	4.05
7A	88	80	85	85	88	80	85	75	80	82	82.8	4.13
8A	75	75	90	78	80	75	80	85	80	82	80	4.81
9A	75	75	70	70	85	75	70	85	75	75	75.5	5.50
10A	85	85	80	82	82	80	85	85	85	80	82.9	2.33

Table C.2 Thickness of peeled-capsule cellulosic film,coated with perforated pan coater

Formula	Thickness(micron)										Average	S.D.
	1	2	3	4	5	6	7	8	9	10	thickness	
1A	72	80	72	70	75	80	75	75	80	72	75.1	3.75
2A	70	72	72	70	72	75	75	72	72	75	72.5	1.90
3A	80	75	78	78	78	75	80	82	80	80	78.6	2.27
4A	75	75	80	75	75	75	80	75	72	80	76.2	2.78
5A	70	70	72	72	68	70	75	77	70	70	71.4	2.72
6A	78	78	78	75	80	84	78	82	78	78	78.9	2.51
7A	82	80	75	75	73	78	80	73	80	80	77.6	3.31
8A	80	85	85	75	80	80	78	78	80	80	80.1	3.03
9A	72	70	76	76	74	78	78	70	72	72	73.8	3.05
10A	75	75	80	78	78	78	75	80	80	73	77.2	2.53

Table C.3 Data of water vapor permeation , weight of a glass vial storing in 75%RH for 3 days

Type of sample	Time (hours)					
	0	6	12	24	48	72
CaCl2	0	0.5526	0.997	1.984	3.928	5.832
Methocel E5	0	0.3079	0.5484	1.0968	2.1936	3.2904
5%PEG6000	0	0.3078	0.5532	1.1064	2.2128	3.3192
10%PEG6000	0	0.2888	0.5232	1.0464	2.0928	3.1392
20%PEG20000	0	0.2944	0.5532	1.0776	2.1552	3.2328
5%TA	0	0.2496	0.4992	1.0521	2.0273	2.9564
10%TA	0	0.264	0.528	1.1089	2.1396	3.1348
20%TA	0	0.2664	0.5328	1.108	2.1519	3.1671
5%TEC	0	0.2352	0.4704	0.9808	1.9079	2.7942
10%TEC	0	0.234	0.468	0.9616	1.8915	2.7823
20%TEC	0	0.216	0.432	0.8754	1.7327	2.5851
5%DEP	0	0.2244	0.4488	0.8955	1.7952	2.6976
10%DEP	0	0.218	0.438	0.8872	1.752	2.6274
20%DEP	0	0.2184	0.4368	0.8899	1.7472	2.6124

Table C.4 Drug content of dimenhydrinate in coated capsule storage for 4 months

Month	Percent label amount (%)								
	RT			35°C			45°C		
Initial	99.01	101.1	100.87	102.49	99.54	98.77	100.72	101.53	99.19
1	103.06	99.42	98.52	99.94	100.86	100.32	97.16	99.47	98.95
2	101.73	96.91	100.89	101.33	98.24	99.92	98.61	99.02	101.46
3	98.78	100.17	102.66	98.62	100.81	100.25	97.55	100.07	98.56
4	98.74	102.53	99.5	102.37	97.26	99.41	98.88	97.24	99.05

Table C.5 Data of tensile strength of HPMC film

e5+10peg tc

	Load at Max.Load (kN)	Stress at Max.Load (MPa)	Strain at Max.Load (mm/mm)	% Strain at Max.Load (%)	Maximum Percent Strain (%)	Load at Auto. Break (kN)	Stress at Auto. Break (MPa)	Strain at Auto. Break (mm/mm)	% Strain at Auto. Break (%)
1	0.896	17.827	0.195	19.486	19.909	0.896	17.827	0.195	19.486
2	1.114	22.170	0.215	21.537	21.537	1.114	22.170	0.215	21.537
3	0.679	13.512	0.200	20.034	20.463	0.646	12.848	0.204	20.375
4	0.930	18.495	0.204	20.372	20.626	0.845	16.819	0.205	20.545
5	0.799	15.896	0.046	4.609	5.011	0.646	12.845	0.049	4.910
6	0.851	16.931	0.194	19.425	19.768	0.851	16.931	0.194	19.425
7	1.023	20.358	0.209	20.903	20.903	1.023	20.358	0.209	20.903
8	0.966	19.219	0.053	5.313	5.313	0.966	19.219	0.053	5.313
9	0.784	15.597	0.050	5.002	5.399	0.727	14.461	0.053	5.299
10	1.166	23.204	0.198	19.848	20.107	1.117	22.221	0.200	20.021
11	0.671	13.346	0.187	18.671	19.176	0.638	12.692	0.188	18.752
12	1.618	32.186	0.218	21.806	22.064	1.541	30.663	0.220	21.977
Mean	0.958	19.062	0.164	16.417	16.690	0.918	18.254	0.165	16.545
S.D.	0.259	5.158	0.070	6.957	6.947	0.262	5.207	0.069	6.915
C.V.	27.059	27.059	42.379	42.379	41.624	28.523	28.523	41.794	41.794

	Modulus (AutYoung) (MPa)	Toughness (MPa)	Tensile Energy Absorption (N/mm)	Energy to Yield Point (J)	Energy to Break Point (J)	Energy / Edge Area (N/mm)
1	18.055	0.604	48.230	0.009	0.594	0.381
2	16.037	0.801	63.888	0.038	0.788	0.504
3	18.023	0.575	45.858	0.038	0.564	0.362
4	14.757	0.688	54.936	0.036	0.679	0.434
5	343.959	0.718	57.295	0.569	0.603	0.452
6	19.712	0.611	48.767	0.021	0.599	0.385
7	14.366	0.730	58.255	0.022	0.719	0.460
8	402.436	0.922	73.566	0.673	0.765	0.581
9	310.088	0.691	55.140	0.544	0.581	0.435
10	23.056	0.868	69.243	0.023	0.848	0.547
11	18.690	0.515	41.092	0.023	0.507	0.324
12	19.002	1.055	84.181	0.014	1.040	0.665
Mean	101.515	0.732	58.371	0.168	0.691	0.461
S.D.	152.469	0.157	12.502	0.260	0.151	0.099
C.V.	150.194	21.418	21.418	155.074	21.837	21.418

Table C.6 Data of tensile strength of HPMC film

e5+20peg tc

	Load at Max.Load (kN)	Stress at Max.Load (MPa)	Strain at Max.Load (mm/mm)	% Strain at Max.Load (%)	Maximum Percent Strain (%)	Load at Auto. Break (kN)	Stress at Auto. Break (MPa)	Strain at Auto. Break (mm/mm)	% Strain at Auto. Break (%)
1	0.382	7.600	0.047	4.698	5.373	0.255	5.066	0.049	4.891
2	0.484	9.621	0.045	4.499	5.104	0.438	8.711	0.046	4.605
3	0.577	11.489	0.041	4.112	4.615	0.577	11.489	0.041	4.112
4	0.414	8.246	0.050	4.975	5.653	0.318	6.317	0.052	5.172
5	0.445	8.846	0.051	5.089	5.582	0.344	6.850	0.055	5.479
6	0.530	10.543	0.047	4.708	5.202	0.530	10.543	0.047	4.708
7	0.570	11.331	0.200	19.955	20.296	0.498	9.907	0.202	20.210
8	0.384	7.637	0.179	17.940	18.278	0.247	4.906	0.182	18.191
9	0.486	9.674	0.053	5.271	5.660	0.486	9.674	0.053	5.271
10	0.519	10.321	0.040	3.969	4.471	0.519	10.321	0.040	3.969
11	0.391	7.845	0.044	4.380	4.776	0.248	4.934	0.047	4.677
12	0.373	7.429	0.047	4.696	5.183	0.283	5.627	0.051	5.085
Mean	0.463	9.215	0.070	7.024	7.516	0.395	7.862	0.072	7.197
S.D.	0.075	1.485	0.056	5.598	5.528	0.125	2.488	0.056	5.640
C.V.	16.112	16.112	79.701	79.701	73.555	31.651	31.651	78.368	78.368

	Modulus (AutYoung) (MPa)	Toughness (MPa)	Tensile Energy Absorption (N/mm)	Energy to Yield Point (J)	Energy to Break Point (J)	Energy / Edge Area (N/mm)
1	161.282	0.340	27.112	0.284	0.295	0.214
2	213.265	0.440	35.079	0.356	0.364	0.277
3	279.279	0.468	37.317	0.391	0.391	0.295
4	166.184	0.401	32.028	0.333	0.346	0.253
5	173.915	0.444	35.407	0.355	0.380	0.280
6	221.739	0.468	37.329	0.399	0.399	0.295
7	13.813	0.421	33.562	0.028	0.415	0.265
8	15.777	0.293	23.419	0.029	0.288	0.185
9	181.727	0.425	33.890	0.364	0.364	0.268
10	259.616	0.443	35.344	0.369	0.369	0.279
11	178.725	0.363	28.942	0.294	0.309	0.228
12	158.312	0.357	28.503	0.286	0.306	0.225
Mean	168.886	0.405	32.328	0.291	0.352	0.255
S.D.	81.721	0.055	4.398	0.128	0.043	0.035
C.V.	48.388	13.605	13.605	44.179	12.264	13.605

Table C.7 Data of tensile strength of HPMC film

e5+5dep tc

	Load at Max.Load (kN)	Stress at Max.Load (MPa)	Strain at Max.Load (mm/mm)	% Strain at Max.Load (%)	Maximum Percent Strain (%)	Load at Auto. Break (kN)	Stress at Auto. Break (MPa)	Strain at Auto. Break (mm/mm)	% Strain at Auto. Break (%)
1	1.246	24.784	0.040	3.999	4.626	1.242	24.712	0.045	4.518
2	1.512	30.087	0.053	5.340	5.340	1.512	30.087	0.053	5.340
3	1.106	22.001	0.197	19.713	20.228	1.039	20.674	0.198	19.803
4	1.901	37.819	0.057	5.743	5.743	1.901	37.819	0.057	5.743
5	0.792	15.766	0.199	19.945	20.462	0.743	14.773	0.204	20.375
6	2.497	49.684	0.045	4.505	4.934	2.466	49.056	0.048	4.827
7	0.721	14.347	0.199	19.906	20.415	0.637	12.669	0.203	20.330
8	1.007	20.032	0.193	19.336	19.935	0.869	17.297	0.195	19.511
9	1.008	20.056	0.192	19.178	19.520	0.927	18.445	0.194	19.433
10	1.044	20.772	0.200	19.964	20.392	0.955	19.003	0.203	20.305
11	1.151	22.902	0.198	19.821	19.821	1.151	22.902	0.198	19.821
12	0.906	18.017	0.206	20.580	20.836	0.861	17.120	0.208	20.754
13	1.556	30.965	0.210	20.997	21.088	1.556	30.965	0.210	20.997
Mean	1.265	25.172	0.153	15.310	15.642	1.220	24.271	0.155	15.520
S.D.	0.495	9.843	0.073	7.251	7.288	0.519	10.319	0.072	7.244
C.V.	39.104	39.104	47.360	47.360	46.591	42.516	42.516	46.674	46.674

	Modulus (AutYoung) (MPa)	Toughness (MPa)	Tensile Energy Absorption (N/mm)	Energy to Yield Point (J)	Energy to Break Point (J)	Energy / Edge Area (N/mm)
1	619.279	1.064	84.887	0.761	0.861	0.670
2	589.381	1.268	101.212	1.017	1.017	0.799
3	15.424	0.775	61.805	0.020	0.761	0.488
4	715.944	1.734	138.377	1.410	1.410	1.092
5	13.763	0.575	45.873	0.027	0.565	0.362
6	1101.938	2.184	174.283	1.601	1.726	1.376
7	11.742	0.589	46.968	0.025	0.582	0.371
8	18.597	0.715	57.062	0.024	0.700	0.450
9	16.611	0.722	57.584	0.017	0.704	0.455
10	17.362	0.780	62.223	0.027	0.766	0.491
11	15.533	0.869	69.322	0.024	0.850	0.547
12	16.609	0.600	47.848	0.027	0.586	0.378
13	17.175	1.133	90.434	0.027	1.109	0.714
Mean	243.797	1.001	79.837	0.385	0.895	0.630
S.D.	374.982	0.485	38.686	0.594	0.345	0.305
C.V.	153.809	48.456	48.456	154.345	38.591	48.456

Table C.8 Data of tensile strength of HPMC film

e5+20dep tc

	Load at Max.Load (kN)	Stress at Max.Load (MPa)	Strain at Max.Load (mm/mm)	% Strain at Max.Load (%)	Maximum Percent Strain (%)	Load at Auto. Break (kN)	Stress at Auto. Break (MPa)	Strain at Auto. Break (mm/mm)	% Strain at Auto. Break (%)
1	0.794	15.799	0.047	4.672	6.353	0.639	12.707	0.059	5.861
2	0.690	13.725	0.047	4.694	5.288	0.604	12.019	0.052	5.187
3	0.808	16.067	0.179	17.948	17.948	0.808	16.067	0.179	17.948
4	1.234	24.552	0.056	5.591	5.591	1.234	24.552	0.056	5.591
5	0.942	18.733	0.200	20.014	20.355	0.877	17.455	0.203	20.273
6	0.843	16.768	0.184	18.389	18.818	0.771	15.337	0.187	18.731
7	1.040	20.697	0.043	4.343	4.748	0.983	19.553	0.046	4.644
8	0.944	18.790	0.048	4.804	4.804	0.944	18.790	0.048	4.804
9	0.983	19.554	0.046	4.584	4.990	0.934	18.572	0.049	4.887
10	1.007	20.038	0.044	4.448	4.852	0.889	17.680	0.048	4.752
11	1.352	26.902	0.051	5.128	5.128	1.352	26.902	0.051	5.128
12	0.831	16.535	0.047	4.746	5.335	0.731	14.538	0.048	4.846
13	0.892	17.756	0.046	4.613	5.206	0.809	16.096	0.051	5.107
Mean	0.951	18.917	0.080	8.021	8.440	0.890	17.713	0.083	8.312
S.D.	0.182	3.615	0.062	6.162	6.078	0.213	4.234	0.061	6.113
C.V.	19.112	19.112	76.817	76.817	72.015	23.902	23.902	73.542	73.542

	Modulus (AutYoung) (MPa)	Toughness (MPa)	Tensile Energy Absorption (N/mm)	Energy to Yield Point (J)	Energy to Break Point (J)	Energy / Edge Area (N/mm)
1	336.857	0.831	66.281	0.568	0.704	0.523
2	292.085	0.664	52.999	0.513	0.564	0.418
3	19.669	0.628	50.090	0.020	0.613	0.395
4	447.232	1.125	89.772	0.920	0.920	0.709
5	16.104	0.714	57.011	0.012	0.703	0.450
6	17.058	0.635	50.688	0.023	0.624	0.400
7	476.227	0.934	74.553	0.726	0.776	0.589
8	438.280	0.839	66.965	0.607	0.697	0.529
9	427.155	0.903	72.033	0.698	0.745	0.569
10	450.187	0.913	72.830	0.711	0.757	0.575
11	522.286	1.207	96.279	0.995	0.995	0.760
12	348.067	0.739	59.005	0.616	0.629	0.466
13	384.003	0.849	67.740	0.653	0.719	0.535
Mean	321.170	0.845	67.404	0.543	0.727	0.532
S.D.	183.528	0.177	14.151	0.327	0.121	0.112
C.V.	57.144	20.994	20.994	60.136	16.606	20.994

Table C.9 Data of compression of coated capsule

Eudragit+10%TEC Aeromatic

	Load at Max.Load (kN)	Stress at Max.Load (MPa)	Strain at Max.Load (mm/mm)	% Strain at Max.Load (%)	Maximum Percent Strain (%)	Load at Auto. Break (kN)	Stress at Auto. Break (MPa)	Strain at Auto. Break (mm/mm)	% Strain at Auto. Break (%)
*1	0.026	0.507	0.028	2.826	3.175	0.012	0.245	0.029	2.900
2	0.022	0.428	0.030	3.031	3.448	0.010	0.201	0.032	3.172
3	0.017	0.342	0.041	4.111	4.518	0.017	0.342	0.041	4.111
4	0.021	0.420	0.031	3.057	3.546	0.012	0.233	0.033	3.264
5	0.021	0.410	0.031	3.100	3.585	0.010	0.195	0.032	3.238
6	0.019	0.372	0.042	4.229	4.637	0.019	0.372	0.042	4.229
*7	0.019	0.374	0.052	5.194	5.532	0.010	0.208	0.053	5.264
8	0.023	0.465	0.033	3.323	3.600	0.012	0.237	0.035	3.534
9	0.021	0.423	0.034	3.421	3.833	0.011	0.212	0.038	3.767
*10	0.021	0.417	0.026	2.613	2.890	0.012	0.234	0.028	2.819
*11	0.022	0.428	0.065	6.486	7.571	0.017	0.331	0.070	6.961
12	0.020	0.395	0.049	4.944	5.622	0.012	0.244	0.054	5.353
13	0.020	0.396	0.047	4.676	5.085	0.020	0.396	0.047	4.676
*14	0.024	0.473	0.027	2.685	2.961	0.024	0.473	0.027	2.685
Mean	0.021	0.413	0.036	3.563	3.975	0.014	0.285	0.037	3.714
S.D.	0.002	0.037	0.008	0.800	0.875	0.005	0.094	0.008	0.816
C.V.	9.076	9.076	22.444	22.444	22.015	32.856	32.856	21.964	21.964

	Modulus (AutYoung) (MPa)	Toughness (MPa)	Tensile Energy Absorption (N/mm)	Energy to Yield Point (J)	Energy to Break Point (J)	Energy / Edge Area (N/mm)	Load at z-slp Yield (kN)	Stress at z-slp Yield (MPa)	% Strain at z-slp Yield (%)
*1	17.912	0.013	1.068	0.013	0.013	0.008	0.026	0.507	2.826
2	13.987	0.011	0.890	0.010	0.011	0.007	0.022	0.428	3.031
3	11.589	0.008	0.656	0.008	0.008	0.005	0.017	0.342	4.111
4	13.775	0.012	0.937	0.011	0.011	0.007	0.021	0.420	3.057
5	13.164	0.011	0.905	0.011	0.011	0.007	–	–	–
6	12.651	0.009	0.711	0.009	0.009	0.006	–	–	–
*7	8.173	0.011	0.843	0.010	0.010	0.007	–	–	–
8	13.985	0.013	1.051	0.012	0.013	0.008	–	–	–
9	12.257	0.013	1.002	0.011	0.012	0.008	0.021	0.423	3.421
10	15.925	0.011	0.849	0.010	0.010	0.007	0.021	0.417	2.613
*11	12.595	0.017	1.354	0.006	0.017	0.011	0.014	0.279	3.024
12	9.161	0.011	0.896	0.010	0.011	0.007	0.020	0.395	4.944
13	10.273	0.010	0.790	0.010	0.010	0.006	–	–	–
14	17.567	0.012	0.964	0.012	0.012	0.008	–	–	–
Mean	13.121	0.011	0.877	0.010	0.011	0.007	0	0	0
S.D.	2.380	0.002	0.120	0.001	0.001	0.001	0	0	0
C.V.	18.142	13.643	13.643	11.551	12.929	13.643	0	0	0

Table C.10 Data of compression of coated capsule

Eudragit+20%PEG6000 Aeromatic

	Load at Max.Load (kN)	Stress at Max.Load (MPa)	Strain at Max.Load (mm/mm)	% Strain at Max.Load (%)	Maximum Percent Strain (%)	Load at Auto. Break (kN)	Stress at Auto. Break (MPa)	Strain at Auto. Break (mm/mm)	% Strain at Auto. Break (%)
*1	0.021	0.415	0.049	4.862	5.133	0.021	0.415	0.049	4.862
*2	0.014	0.275	0.037	3.673	4.215	0.014	0.275	0.037	3.673
3	0.026	0.516	0.026	2.649	2.926	0.013	0.266	0.029	2.859
*4	0.030	0.602	0.036	3.592	4.227	0.027	0.541	0.042	4.155
*5	0.023	0.463	0.023	2.264	2.544	0.012	0.235	0.025	2.475
6	0.026	0.514	0.031	3.117	3.400	0.013	0.258	0.033	3.327
7	0.019	0.380	0.027	2.674	3.022	0.011	0.212	0.027	2.744
8	0.027	0.533	0.033	3.335	3.756	0.013	0.250	0.035	3.475
9	0.021	0.413	0.031	3.144	3.417	0.021	0.413	0.031	3.144
10	0.028	0.552	0.038	3.772	4.191	0.013	0.259	0.039	3.912
11	0.025	0.494	0.028	2.794	3.284	0.012	0.242	0.030	3.002
12	0.027	0.547	0.038	3.805	4.229	0.011	0.226	0.039	3.944
13	0.027	0.544	0.031	3.073	3.422	0.015	0.297	0.031	3.147
Mean	0.025	0.499	0.032	3.152	3.516	0.014	0.269	0.033	3.284
S.D.	0.003	0.061	0.004	0.427	0.461	0.003	0.059	0.004	0.427
C.V.	12.310	12.310	13.560	13.560	13.110	21.939	21.939	13.001	13.001

	Modulus (AutYoung) (MPa)	Toughness (MPa)	Tensile Energy Absorption (N/mm)	Energy to Yield Point (J)	Energy to Break Point (J)	Energy / Edge Area (N/mm)	Load at z-slp Yield (kN)	Stress at z-slp Yield (MPa)	% Strain at z-slp Yield (%)
*1	10.636	0.011	0.853	0.011	0.011	0.007	–	–	–
*2	9.536	0.006	0.487	0.006	0.006	0.004	–	–	–
3	19.429	0.013	1.066	0.012	0.013	0.008	0.026	0.516	2.649
*4	17.227	0.021	1.687	0.017	0.020	0.013	–	–	–
*5	20.429	0.012	0.940	0.011	0.011	0.007	–	–	–
6	16.661	0.014	1.130	0.013	0.014	0.009	0.026	0.514	3.117
7	14.283	0.011	0.841	0.010	0.010	0.007	–	–	–
8	15.995	0.015	1.206	0.014	0.015	0.010	0.027	0.533	3.335
9	13.063	0.011	0.890	0.011	0.011	0.007	–	–	–
10	14.590	0.016	1.238	0.015	0.015	0.010	–	–	–
11	17.719	0.013	1.035	0.012	0.012	0.008	–	–	–
12	14.658	0.021	1.685	0.020	0.020	0.013	0.027	0.547	3.805
13	17.738	0.015	1.194	0.014	0.014	0.009	0.027	0.544	3.073
Mean	16.015	0.014	1.143	0.013	0.014	0.009	0	0	0
S.D.	2.047	0.003	0.246	0.003	0.003	0.002	0	0	0
C.V.	12.782	21.489	21.489	21.334	21.192	21.489	0	0	0

Table C.11 Data of compression of coated capsule

Eudragit+10%PEG6000 Aeromatic

	Load at Max.Load (kN)	Stress at Max.Load (MPa)	Strain at Max.Load (mm/mm)	% Strain at Max.Load (%)	Maximum Percent Strain (%)	Load at Auto. Break (kN)	Stress at Auto. Break (MPa)	Strain at Auto. Break (mm/mm)	% Strain at Auto. Break (%)
*1	0.016	0.320	0.040	3.998	4.471	0.016	0.320	0.040	3.998
2	0.021	0.425	0.045	4.470	5.563	0.013	0.266	0.053	5.289
3	0.022	0.436	0.027	2.709	2.918	0.012	0.230	0.028	2.850
4	0.022	0.438	0.028	2.817	3.025	0.012	0.240	0.030	2.958
5	0.018	0.360	0.042	4.165	4.643	0.018	0.360	0.042	4.165
6	0.023	0.454	0.031	3.131	3.340	0.011	0.224	0.033	3.269
7	0.023	0.467	0.026	2.594	3.502	0.013	0.259	0.034	3.432
* 8	0.019	0.381	0.051	5.050	5.524	0.011	0.219	0.053	5.255
9	0.019	0.374	0.046	4.645	5.801	0.013	0.257	0.057	5.736
10	0.018	0.359	0.042	4.161	4.433	0.018	0.359	0.042	4.161
11	0.025	0.489	0.031	3.053	3.329	0.013	0.254	0.033	3.260
12	0.018	0.354	0.047	4.735	5.754	0.013	0.257	0.057	5.685
* 13	0.022	0.434	0.024	2.374	2.722	0.012	0.235	0.024	2.443
Mean	0.021	0.414	0.037	3.659	4.213	0.013	0.264	0.040	4.042
S.D.	0.002	0.047	0.010	0.966	1.207	0.002	0.047	0.012	1.182
C.V.	11.255	11.255	26.413	26.413	28.659	17.964	17.964	29.236	29.236

	Modulus (AutYoung) (MPa)	Toughness (MPa)	Tensile Energy Absorption (N/mm)	Energy to Yield Point (J)	Energy to Break Point (J)	Energy / Edge Area (N/mm)	Load at z-slp Yield (kN)	Stress at z-slp Yield (MPa)	% Strain at z-slp Yield (%)
*1	10.624	0.007	0.595	0.007	0.007	0.005	0.016	0.320	3.998
2	13.333	0.012	0.982	0.010	0.012	0.008	–	–	–
3	16.055	0.011	0.873	0.010	0.011	0.007	–	–	–
4	15.606	0.011	0.895	0.010	0.011	0.007	–	–	–
5	12.544	0.009	0.699	0.009	0.009	0.006	–	–	–
6	14.508	0.012	0.938	0.011	0.011	0.007	–	–	–
7	18.059	0.014	1.111	0.011	0.013	0.009	–	–	–
8	10.506	0.011	0.894	0.011	0.011	0.007	0.019	0.381	5.050
9	10.363	0.012	0.975	0.010	0.012	0.008	–	–	–
10	12.318	0.009	0.685	0.008	0.008	0.005	–	–	–
11	16.069	0.013	1.028	0.012	0.012	0.008	–	–	–
12	9.595	0.012	0.939	0.009	0.012	0.007	–	–	–
13	18.275	0.010	0.831	0.010	0.010	0.007	–	–	–
Mean	13.936	0.011	0.904	0.010	0.011	0.007	0	0	0
S.D.	2.958	0.002	0.124	0.001	0.001	0.001	0	0	0
C.V.	21.229	13.678	13.678	10.133	13.378	13.678	0	0	0

Table C.12 Data of compression of coated capsule

eUDRAGIT+10%dep aEROMATIC

	Load at Max.Load (kN)	Stress at Max.Load (MPa)	Strain at Max.Load (mm/mm)	% Strain at Max.Load (%)	Maximum Percent Strain (%)	Load at Auto. Break (kN)	Stress at Auto. Break (MPa)	Strain at Auto. Break (mm/mm)	% Strain at Auto. Break (%)
1	0.026	0.515	0.032	3.156	3.505	0.012	0.234	0.034	3.434
2	0.031	0.627	0.043	4.333	4.960	0.031	0.617	0.046	4.613
3	0.025	0.506	0.032	3.193	3.683	0.012	0.236	0.034	3.401
4	0.027	0.531	0.034	3.429	4.687	0.027	0.531	0.034	3.429
5	0.021	0.421	0.051	5.079	5.352	0.012	0.232	0.053	5.282
6	0.027	0.531	0.036	3.554	3.903	0.012	0.247	0.038	3.835
7	0.023	0.454	0.030	2.996	3.273	0.023	0.454	0.030	2.996
8	0.032	0.630	0.063	6.307	6.581	0.032	0.630	0.063	6.307
9	0.033	0.654	0.045	4.469	4.747	0.033	0.654	0.045	4.469
10	0.032	0.646	0.037	3.730	4.151	0.013	0.264	0.039	3.870
11	0.028	0.554	0.036	3.562	5.101	0.028	0.554	0.036	3.562
Mean	0.028	0.552	0.040	3.982	4.540	0.021	0.423	0.041	4.109
S.D.	0.004	0.079	0.010	0.999	0.967	0.009	0.181	0.010	0.984
C.V.	14.295	14.295	25.081	25.081	21.297	42.750	42.750	23.947	23.947

	Modulus (AutYoung) (MPa)	Toughness (MPa)	Tensile Energy Absorption (N/mm)	Energy to Yield Point (J)	Energy to Break Point (J)	Energy / Edge Area (N/mm)	Load at z-slp Yield (kN)	Stress at z-slp Yield (MPa)	% Strain at z-slp Yield (%)
1	16.315	0.015	1.180	0.013	0.014	0.009	0.026	0.515	3.156
2	14.662	0.021	1.670	0.018	0.020	0.013	0.031	0.627	4.333
3	15.868	0.016	1.253	0.015	0.015	0.010	–	–	–
4	15.469	0.015	1.179	0.014	0.014	0.009	–	–	–
5	10.015	0.012	0.927	0.011	0.011	0.007	0.021	0.421	5.079
6	14.925	0.016	1.259	0.014	0.015	0.010	0.027	0.531	3.554
7	15.181	0.012	0.957	0.011	0.011	0.008	–	–	–
8	10.399	0.024	1.910	0.023	0.023	0.015	0.032	0.630	6.307
9	15.316	0.020	1.589	0.019	0.019	0.013	–	–	–
10	17.304	0.019	1.494	0.017	0.018	0.012	0.032	0.646	3.730
11	15.624	0.016	1.257	0.015	0.015	0.010	0.028	0.554	3.562
Mean	14.643	0.017	1.334	0.016	0.016	0.011	0	0	0
S.D.	2.308	0.004	0.301	0.004	0.004	0.002	0	0	0
C.V.	15.762	22.603	22.603	23.062	22.590	22.603	0	0	0

Table C.13 Disintegration time of dimenhydrinate in coated capsule storage for 4 months

Temperature	Time (months)				
	0	1	2	3	4
Room temp.	4.5	6	5.5	5.2	4.5
35°C	4.5	4.45	5.2	5.4	6.5
45°C	4.5	6.33	5.45	7.45	5

Table C.14 Dissolution data of dimenhydrinate in coated capsule storage for 4 months

	Time(min)						
	0	5	10	15	30	45	60
initial	0	4.05	12.38	46.52	94.13	98.64	100.37
Month2	0	2.67	14.59	39.29	95.67	99.76	99.86
Month4	0	3.24	8.6	34.51	86.92	96.03	101.72

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