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APPENDICES

Appendix A Water Content in Microemulsion in the Absence of Fatty acid

A1 Hexanol

Table A 1-1 50 mM NaDEHP

40 mM hexanol			100 mM hexanol			150 mM hexanol		
NaCl, M	Water, wt %	W _o	NaCl, M	Water, wt %	W _o	NaCl, M	Water, wt %	W _o
0.1	2.5075	4.17	0.1	1.5820	3.85	0.1	1.3260	3.97
0.5	1.8725	3.88	0.5	1.2820	3.78	0.5	1.1690	3.62
1.0	1.4543	3.14	1.0	1.1347	3.50	1	1.0260	3.08
2.0	1.0309	3.08	2.0	0.8965	2.73	2	0.8423	2.54
2.5	0.9312	2.78	2.5	0.8844	2.70	2.5	0.8295	2.55
3.0	0.8967	2.70	3.0	0.7614	2.24	3	0.7467	2.21

Table A1-2 70 mM NaDEHP

40 mM hexanol			100 mM hexanol			150 mM hexanol		
NaCl, M	Water, wt %	W _o	NaCl, M	Water, wt %	W _o	NaCl, M	Water, wt %	W _o
0.1	1.4630	10.73	0.1	1.7240	5.80	0.1	1.5197	6.45
0.5	2.9310	9.21	0.5	1.5230	6.18	0.5	1.4550	6.11
1.0	2.2940	6.94	1.0	1.2987	5.53	1.0	1.3133	5.38
2.0	1.6960	3.69	2.0	1.1463	1.90	2.0	1.1257	4.57
3.0	1.5330	3.30	3.0	0.9519	4.07	3.0	0.9595	3.78

Table A1-3 100 mM NaDEHP

40 mM hexanol			100 mM hexanol			150 mM hexanol		
NaCl, M	Water, wt %	W _o	NaCl, M	Water, wt %	W _o	NaCl, M	Water, wt %	W _o
0.1	0.0010	0	0.1	7.1913	13.38	0.1	3.9100	10.63
0.5	2.7470	6.05	0.5	3.4173	7.88	0.5	2.9783	7.48
1.0	3.0000	6.63	1.0	2.6017	7.41	1.0	2.3593	6.51
2.0	2.1450	4.95	2.0	2.0183	5.79	2.0	1.9050	4.89
3.0	1.0222	1.64	3.0	1.6710	4.72	3.0	1.6057	4.2

note: Data for determination of water content (4.1.3)

A2 1-Propanol**Table A2-1** 100 mM NaDEHP

150 mM 1-propanol			200 mM 1-propanol		
NaCl, M	Water, wt %	W _o	NaCl, M	Water, wt %	W _o
0.1	1.4070	6.94	0.1	1.5047	7.18
0.5	1.2577	5.92	0.5	1.5680	6.29
1.0	1.1125	5.35	1.0	1.1710	5.63
2.0	0.9270	4.32	2.0	0.9684	4.49
2.5	0.9038	4.40	2.5	0.9066	4.25
3.0	0.8157	3.77	3.0	0.8427	3.89

Table A2-2 120 mM NaDEHP

200 mM 1-propanol		
NaCl, M	Water, wt %	W _o
0.1	0.9330	3.28
0.5	4.0200	15.45
1.0	3.3747	11.44
2.0	2.5855	8.29
2.5	2.2986	7.71
3.0	2.0117	7.04

Table A2-3 150 mM NaDEHP

150 mM 1-propanol		
NaCl, M	Water, wt %	W _o
0.1	0.1686	0.96
0.5	5.5480	31.74
1.0	3.9143	19.98
2.0	3.2310	17.87
2.5	2.9283	14.88
3.0	2.6255	12.16

note: Data for determination of water content (4.1.3)

A3 2-Propanol**Table A3-1** 100 mM NaDEHP

150 mM 2-propanol			200 mM 2-propanol		
NaCl, M	Water, wt %	W _o	NaCl, M	Water, wt %	W _o
0.1	1.4187	6.88	0.1	0.0005	0.00
0.5	1.3080	6.41	0.5	0.3538	1.60
1.0	1.1250	4.91	1.0	2.9899	13.26
2.0	0.9584	4.79	2.0	2.4090	11.50
2.5	0.8784	3.81	2.5	2.0390	9.77
3.0	0.8091	3.95	3.0	1.8350	8.74

Table A3-2 150 mM NaDEHP
150 mM 2-propanol

NaCl, M	Water, wt %	W _o
0.1	0.453	1.19
0.5	5.738	11.11
1	4.126	11.92
2	3.054	8.70
2.5	2.898	8.35
3	2.760	8.00

note: Data for determination of water content (4.1.3)

Appendix B Water Content in Microemulsion in the Presence of Fatty acid

B1 Hexanol with 50 mM caprylic acid-comparing with out caprylic acid

Table B1-1 50 mM NaDEHP/ 150 mM hexanol/1.0 M NaCl

	Water, wt %	Wo
no caprylic acid	1.1220	8.50
with caprylic acid	0.7592	6.00

TableB1-2 70 mM NaDEHP/ 40 mM hexanol/ 0.5 M NaCl

	Water, wt %	Wo
no caprylic acid	2.8416	16.20
with caprylic acid	1.2730	7.10

Table B1-3 150 mM NaDEHP/40 mM hexanol/ 0.5 M NaCl

	Water, wt %	Wo
no caprylic acid	6.426	17.1
with caprylic acid	3.8737	10.4

Table B1-4 150 mM NaDEHP/150 mM hexanol/0.5 M NaCl

	Water, wt %	Wo
no caprylic acid	3.9843	10.7
with caprylic acid	3.5357	9

B2 1-Propanol with 50 mM caprylic acid-comparing without caprylic acid

TableB2-1 100 mMNaDEHP/150 mM 1-propanol/ 2.0 M NaCl

	Water, wt %	Wo
no caprylic acid	1.0133	4.00
with caprylic acid	0.6280	2.50

TableB2-2 120 mMNaDEHP/200 mM 1-propanol/1.5 M NaCl

	Water, wt %	Wo
no caprylic acid	3.0220	9.70
with caprylic acid	2.0390	6.60

TableB2-3 120 mM NaDEHP/ 200 mM 1-propanol/0.5 M NaCl

	Water, wt %	Wo
with caprylic acid	2.6430	8.70

note: Data for determination of water content (4.1.3)

B3 2-Propanol with 50 mM caprylic acid-comparing with out caprylic acid

TableB3-1 100 mM NaDEHP/ 150 mM
2-propanol /1.0 M NaCl

	Water, wt %	Wo
no caprylic acid	1.1716	4.35
with caprylic acid	0.7529	3.00

TableB3-2 100 mM NaDEHP/ 200 mM
2-propanol /2.5 M NaCl

	Water, wt %	Wo
no caprylic acid	1.9507	8.07
with caprylic acid	1.3330	5.05

TableB3-3 100 mM NaDEHP/ 200 mM
2-propanol /1.0 M NaCl

	Water, wt %	Wo
with caprylic acid	1.7460	6.56

note: Data for determination of water content (4.1.3)

Appendix C Esterification of Caprylic Acid

C1 Caprylic acid with hexanol

1. 150 mM hexanol/150 mM NaDEHP/30-100 mM caprylic/1.0 M NaCl 0.042 mg/ml of lipase, $R_h \sim 6.2$ nm

Table C1-1 30 mM caprylic acid ($W_o=7.5$)

t, min	A	mM (mes.)	mM
0	0.04	0.41	25.8
5	0.03	0.25	15.6
15	0.02	0.20	12.3
25	0.02	0.17	10.4
50	0.01	0.14	8.6
100	0.02	0.17	10.4

Table C1-2 50 mM caprylic acid ($W_o=6.7$)

t, min	A	mM (mes.)	mM
0	0.08	0.79	49.1
5	0.07	0.69	42.9
15	0.06	0.58	36.2
30	0.05	0.48	30.1
175	0.05	0.49	30.7
-	-	-	-

Table C1-3 70 mM caprylic acid ($W_o=6.3$)

t, min	A	mM (mes.)	mM
0	0.115	1.13	70.5
5	0.11	1.08	67.5
15	0.06	0.55	34.3
25	0.05	0.53	32.8
50	0.05	0.53	33.4
100	0.06	0.54	33.7

Table C1-4 100 mM caprylic acid ($W_o = 5.8$)

t, min	A	mM (mes.)	mM
0			100
5	0.12	1.22	76.1
15	0.10	1.00	62.6
25	0.10	0.98	61.0
50	0.10	0.98	61.0
100	0.11	1.04	65.0

Table C1-5 150 mM caprylic acid ($W_o = 4.3$)

t, min	A	mM (mes.)	mM
0			150
5	0.23	2.21	138.0
15	0.22	2.18	136.2
30	0.22	2.18	136.2
60	0.22	2.13	133.1
120	0.22	2.18	136.2

Table C1-6 Conversion of caprylic acid with time

Caprylic acid	30 mM	50 mM	70 mM	100 mM	150 mM
t, min	X, %	X, %	X, %	X, %	X, %
0	0	0	0	0	0
5	34	14	32	24	8
15	45	28	51	37	9
25	51	40	53	39	9
50	57	39	52	39	11
100	51	-	52	35	9

note: Data for esterification of caprylic acid with hexanol (4.2.2.1)

C2 Caprylic acid with 1-propanol

0.042 mg/ml of lipase

Table C2-1 50 mM caprylic acid
($W_o = 6.0$)

t, min	A	mM (mes.)	mM
0	0.082	0.80	40.2
5	0.070	0.68	34.1
30	0.064	0.63	31.4
65	0.072	0.70	35.1
115	0.069	0.68	34.0
235	0.068	0.67	33.4
385	0.066	0.65	32.4

Table C2-3 100 mM caprylic acid
($W_o = 4.0$)

t, min	A	mM (mes.)	mM
0	0.17	1.67	83.4
5	0.164	1.61	80.5
30	0.159	1.56	78.0
65	0.161	1.58	79.0
115	0.160	1.57	78.4
235	0.160	1.57	78.3
385	0.159	1.56	78.1

Table C2-2 70 mM caprylic acid
($W_o = 5.0$)

t, min	A	mM (mes.)	mM
0	0.13	1.28	63.8
5	0.107	1.05	52.3
30	0.099	0.97	48.3
65	0.104	1.02	50.8
115	0.102	1.00	49.9
235	0.103	1.01	50.5
385	0.103	1.01	50.4

Table C2-4 150 mM caprylic acid
($W_o = 3.0$)

t, min	A	mM (mes.)	mM
0	0.265	2.60	130.0
5	0.258	2.53	126.6
30	0.257	2.52	126.1
65	0.257	2.52	125.9
115	0.255	2.50	125.0
235	0.255	2.50	124.9
385	0.254	2.49	124.7

note: Data for esterification of caprylic acid with 1-propanol (4.2.3.1)

C3 Caprylic acid with 2-propanol

3. 200 mM 2-propanol/100 mM NaDEHP, 30-100 mM caprylic/0.5 M NaCl,
0.042 mg/ml of lipase

Table C3-1.1 50 mM caprylic acid
($W_o = 6.0$)

t, min	A	mM (mes.)	mM
0		0.00	0.0
5	0.067	0.65	32.6
30	0.065	0.64	31.9
65	0.069	0.67	33.6
150	0.067	0.66	32.9
330	0.072	0.71	35.3

Table C3-1.2 70 mM caprylic acid
($W_o = 5.0$)

t(min)	A	mM (mes.)	mM
0		0.00	0.0
5	0.103	1.01	50.5
30	0.101	0.99	49.6
65	0.100	0.98	49.1
150	0.100	0.98	49.1
330	0.103	1.01	50.5

Table C3-1.3 100 mM caprylic acid
($W_o = 4.0$)

t, min	A	mM (mes.)	mM
0		0.00	0.0
5	0.160	1.57	78.3
30	0.160	1.57	78.3
65	0.159	1.56	78.0
150	0.162	1.58	79.2
330	0.164	1.61	80.5

Table C3-1.4 150 mM caprylic acid
($W_o = 3.0$)

t, min	A	mM (mes.)	mM
0		0.00	150
5	0.262	2.57	128.3
30	0.258	2.53	126.3
65	0.261	2.56	128.1
150	0.263	2.58	129.0
330	0.266	2.61	130.5

note: Data for esterification of caprylic acid with 2-propanol (4.2.3.1)

Appendix D Esterification of Oleic Acid

D1 Oleic acid with hexanol

150 mM hexanol/150 mM NaDEHP, 30-100 mM oleic/1.0 M salt 0.042 mg/ml of lipase, $R_h \sim 6.2$ nm

Table D1-1 50 mM oleic acid
($W_o = 7.2$)

t, min	A	mM (mes.)	mM
0			50
5	0.05	0.53	26.3
15	0.04	0.42	20.8
35	0.04	0.42	20.8
80	0.04	0.37	18.7
120	0.031	0.31	15.7

Table D1-4 100 mM oleic acid
($W_o = 5.5$)

t, min	A	mM (mes.)	mM
0			100
5	0.14	1.39	69.4
15	0.12	1.17	58.5
35	0.11	1.16	57.8
80	0.12	1.19	59.3
120	0.12	1.19	59.3

Table D1-2 70 mM oleic acid
($W_o = 6.4$)

t, min	A	mM (mes.)	mM
0			70
5	0.08	0.83	41.5
15	0.08	0.78	38.8
35	0.07	0.73	36.5
80	0.07	0.73	36.5
120	0.07	0.73	36.5

Table D1-5 150 mM oleic acid
($W_o = 4.7$)

t, min	A	mM (mes.)	mM
0			150
5	0.21	2.15	107.4
15	0.21	2.12	105.9
35	0.21	2.10	104.9
80	0.21	2.15	107.4
120	0.20	2.07	103.3

Table D1-6 Conversion of oleic acid with time

Caprylic acid t, min	50 mM X, %	70 mM X, %	100 mM X, %	150 mM X, %
0	0	0	0	0
5	47	41	31	28
15	58	45	41	29
25	59	48	42	30
50	62	48	41	28
100	69	48	41	31

note: Data for esterification of oleic acid with hexanol (4.2.2.2)

D2 Oleic acid with 1-propanol

200 mM 1-propanol/120 mM NaDEHP, 70 mM Oleic/0.5 M NaCl, 0.042 mg/ml of lipase

Table D2-1 70 mM oleic acid

t, min	A	mM (mes.)	mM
0	0.14	1.42	70.9
5	0.13	1.36	67.9
15	0.13	1.32	65.9
30	0.13	1.33	66.4
60	0.12	1.26	62.8
120	0.128	1.30	64.8

D3 Oleic acid with 2-propanol

200 mM 2-propanol/100 mM NaDEHP, 70 mM oleic/0.5 M NaCl, 0.042 mg/ml of lipase

Table D3-1 70 mM oleic acid

t, min	A	mM (mes.)	mM
0	0.14	1.43	71.4
5	0.14	1.37	68.4
15	0.13	1.34	66.9
30	0.13	1.30	64.8
60	0.13	1.28	63.8
120	0.125	1.27	63.3

note: Data for esterification of caprylic acid with 1-propanol and 2-propanol (4.2.3.2)

Appendix E Esterification of Oleic Acid

E1 palmatic acid with hexanol

150 mM hexanol/150 mM NaDEHP, 50-100 palmatic/1.0 M salt 0.042 mg/ml of lipase, $R_h \sim 6.2$ nm

Table E1-1 50 mM palmatic acid
($W_o = 6.8$)

t, min	A	mM (mes.)	mM
0	0.09	0.74	52.5
5	0.09	0.72	50.9
20	0.03	0.21	14.9
40	0.02	0.15	10.6
80	0.02	0.18	12.5
120	0.0205	0.16	11.1

Table E1-2 70 mM palmatic acid
($W_o = 6.1$)

t, min	A	mM (mes.)	mM
0	0.07	0.72	51.1
5	0.07	0.54	38.5
20	0.03	0.26	18.4
40	0.03	0.23	16.0
80	0.03	0.23	16.5
120	0.029	0.22	15.7

Table E1-3 100 mM palmatic acid
($W_o = 5.6$)

t, min	A	mM (mes.)	mM
0	0.10	1.42	100.8
5	0.10	0.75	53.1
20	0.08	0.57	40.6
40	0.07	0.51	36.0
80	0.05	0.39	27.9
120	0.0415	0.32	22.5

Table E1-4 Conversion of palmatic acid with time

Palmatic acid	50 mM	70 mM	100 mM
t, min	X, %	X, %	X, %
0	0	0	0
5	-1.8	45	47
15	70	74	60
25	79	77	64
50	75	76	72
100	78	78	77

note: Data for esterification of palmatic acid with hexanol (4.2.2.3)

E2 Palmatic acid with 1-propanol

200 mM 1-propanol/120 mM NaDEHP, 70 mM palmatic/0.5 M NaCl, 0.042 mg/ml of lipase

Table E2-1 70 mM palmatic acid

t, min	A	mM (mes.)	mM
0	0.12	0.92	65.0
5	0.11	0.82	58.5
15	0.11	0.81	57.4
30	0.11	0.84	59.6
60	0.12	0.91	64.4
120	0.1165	0.89	63.1

E3 Palmatic acid with 2-propanol

200 mM 2-propanol/100 mM NaDEHP, 70 mM palmatic/0.5 M NaCl, 0.042 mg/ml of lipase

Table E3-1 70 mM palmatic acid

t, min	A	mM (mes.)	mM
0			70
5	0.12	0.89	63.1
15	0.11	0.83	59.0
30	0.12	0.95	67.2
60	0.11	0.84	59.3
120	0.1125	0.86	60.9

note: Data for esterification of caprylic acid with 1-propanol and 2-propanol (4.2.3.3)

Appendix F Calibration Curve

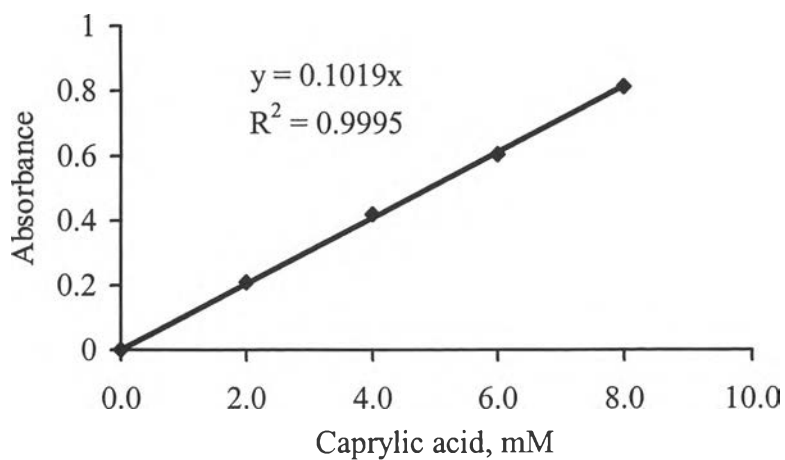


Figure F-1 Calibration curve of caprylic acid

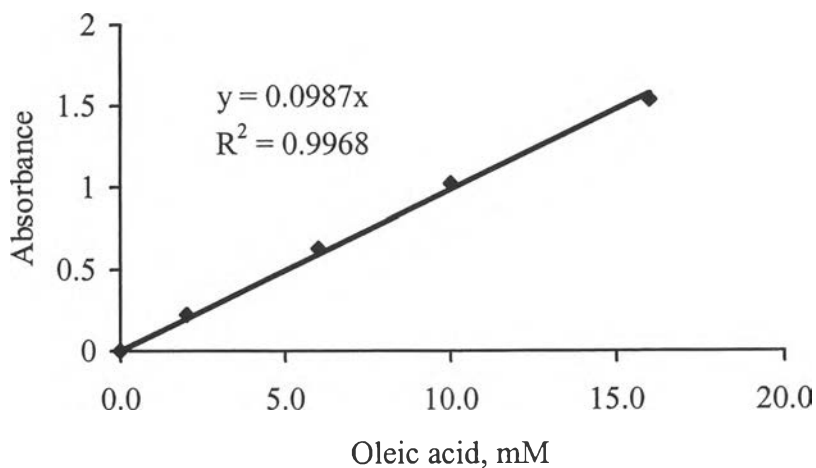


Figure F-2 Calibration curve of oleic acid

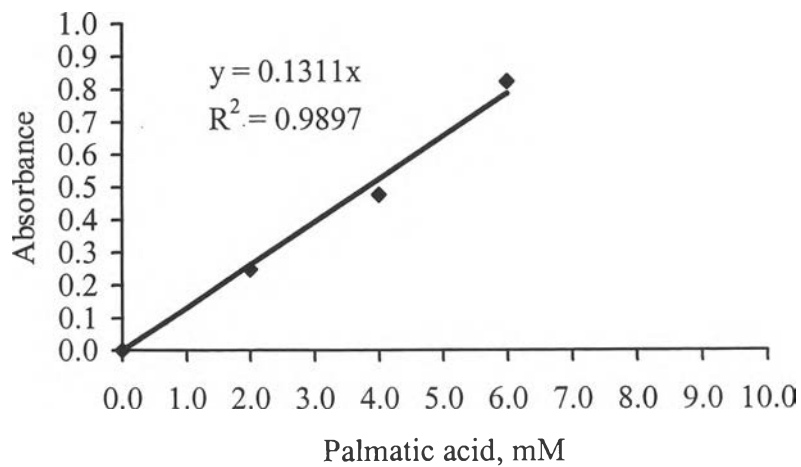


Figure F-3 Calibration curve of palmitic acid

note: Data for fatty acid determination by UV-VIS (4.3.1)

Appendix G FT-IR Spectra

G1 Spectra of substrates

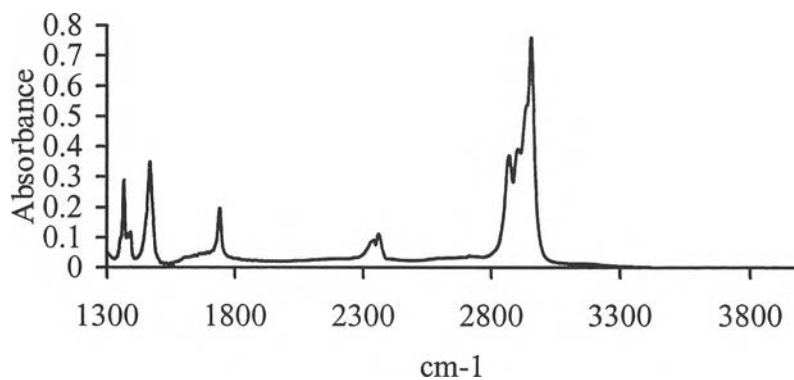


Figure G1-1 Spectrum of caprylic acid

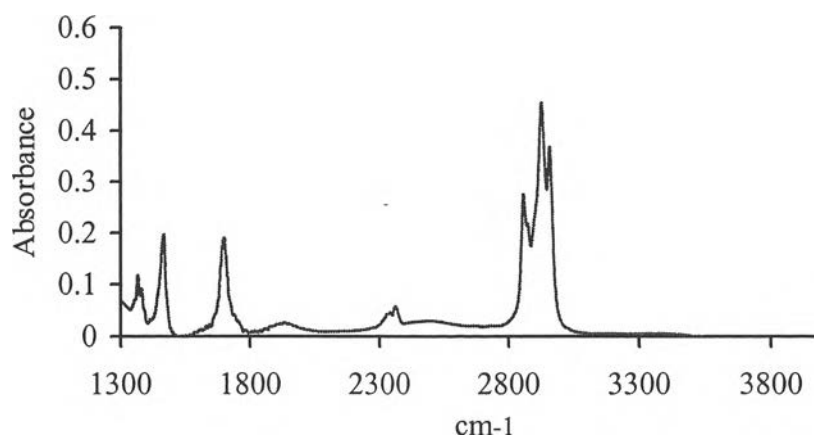


Figure G1-2 Spectrum of palmitic acid

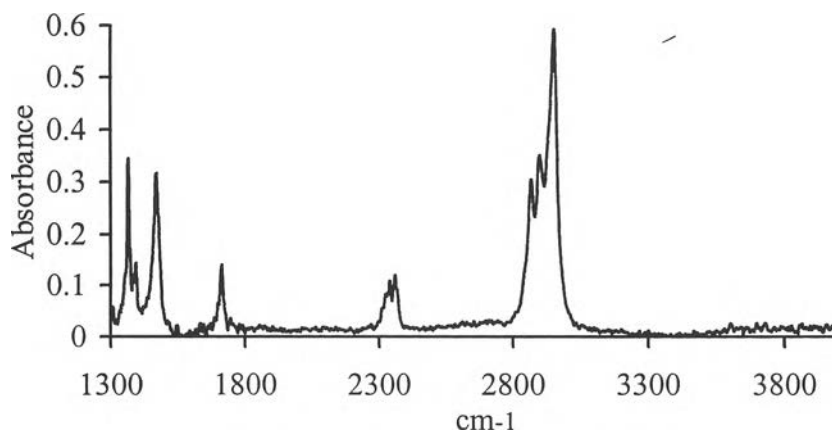


Figure G1-3 Spectrum of oleic acid

note: Data for ester determination by FT-IR (4.3.2)

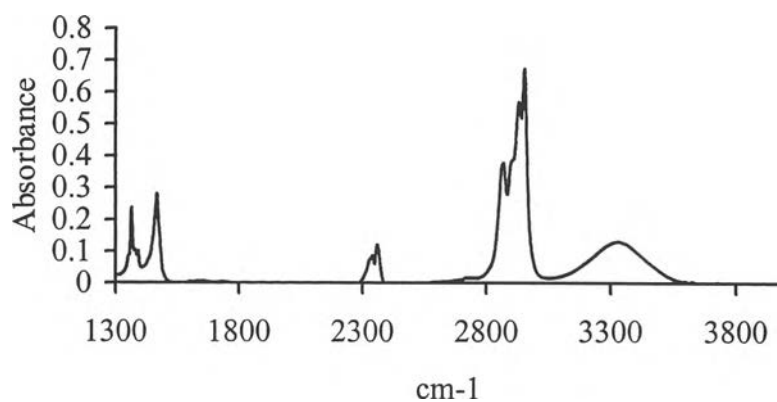


Figure G1-4 Spectrum of hexanol

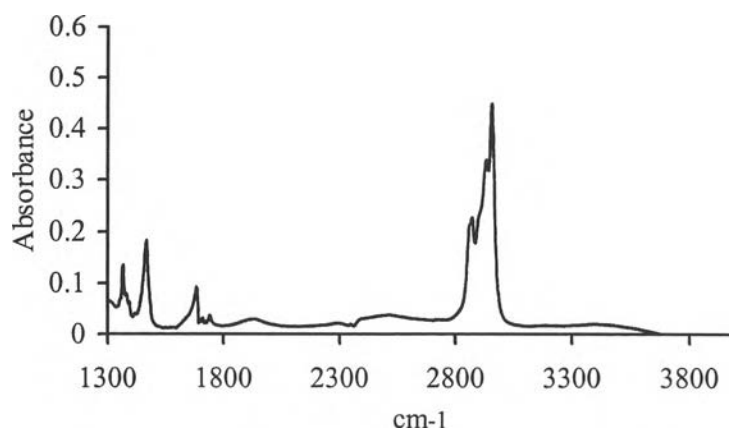


Figure G1-5 Spectrum of 1-propanol

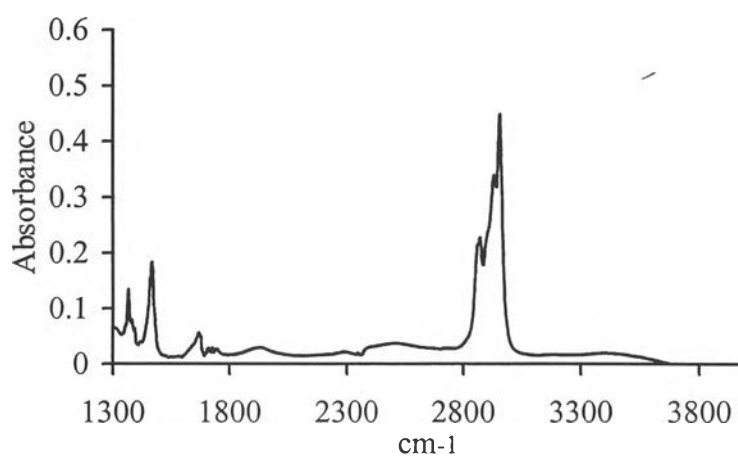


Figure G1-6 Spectrum of 2-propanol

note: Data for ester determination by FT-IR (4.3.2)

G2 Spectra of Other Components in Microemulsions

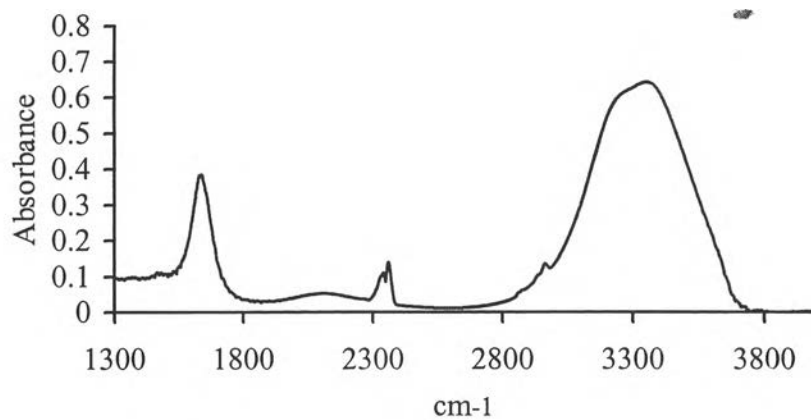


Figure G2-1 Spectrum of *R. delamar* lipase

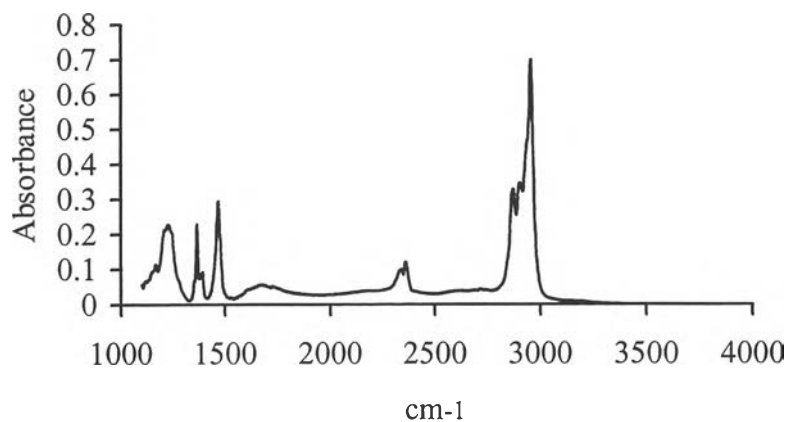


Figure G2-2 Spectrum of sodium bis (2-ethylhexyl) hydrogen phosphate (NaDEHP)

Appendix H Example of Calculation

H1 Example of water to surfactant ratio determination

Condition: 50 mM NaDEHP/40 mM hexanol/0.1 M NaCl

average water content = $W = 2.5075\%$ (w/w)

average weight of total sample = $W_t = 37\text{ g}$

volume of sample = $V = 0.1\text{ ml}$

molar concentration of NaDEHP in organic phase = $[\text{NaDEHP}] = 50\text{ mM}$

$$W_o = \frac{(W)(W_t)*1000}{M_w (V)*[\text{NaDEHP}]}$$

$$W_o = \frac{(37)(2.5075/100)(1000)}{(18)(0.1)(50)}$$

$$W_o = 10.31$$

H2 Example of activity determination

Condition: 150 mM NaDEHP/50 mM caprylic acid/150 mM hexanol/1.0 M NaCl

initial rate from curve fitting by Excel = 1.9 mM/min

total amount of lipase determine by UV-Vis = 0.210 mg

$$\text{Activity} = \frac{\text{initial rate (mM/min)}}{\text{over all enzyme concentration (mg)}}$$

$$\text{Activity} = \frac{1.9}{0.21} = 9.05\text{ mM/(min)(mg)}$$

Appendix I Determination of Lipase

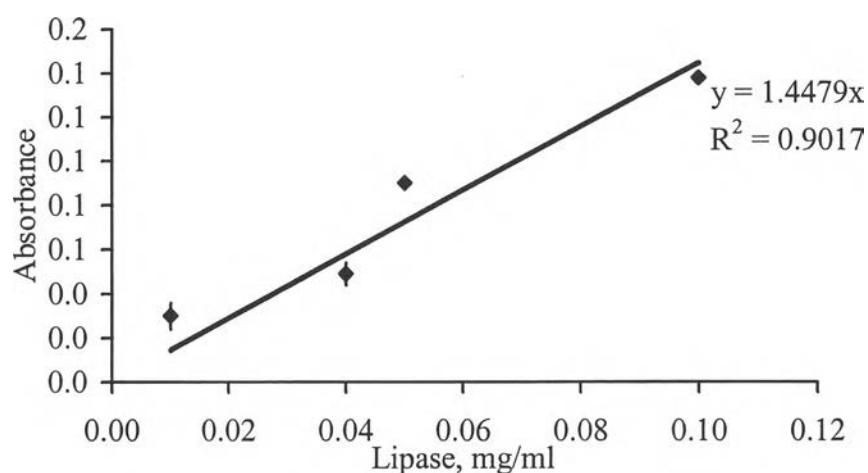


Figure I-1 Calibration curve of *R. delemar* lipase at 280 nm

Table I-1 Concentration of lipase before and after encapsulation

Conditions	Absorbance		Lipase, mg/ml	
	before encapsulation	after encapsulation	before encapsulation	after encapsulation
150 mM hexanol/50 mM caprylic acid/150 mM NaDEHP/1.0 M NaCl	0.085	0.086	0.058	0.059
200 mM 1-propanol/50 mM caprylic acid/120 mM NaDEHP/0.5 M NaCl	0.061	0.075	0.042	0.052
200 mM 2-propanol/50 mM caprylic acid/100 mM NaDEHP/0.5 M NaCl	0.068	0.075	0.047	0.052

note: Data on effect of lipase concentration (4.2.1)

Appendix J Water to Surfactant Ratio (Wo)

J1 Caprylic acid

1. 150 mM hexanol/150 mM NaDEHP/1.0 M NaCl/ 30-150 mM caprylic acid

Table J1-1.1 30 mM caprylic acid

	W*, wt%	Wt*	Water, mg	V, ml	Water, M	Wo	Rh*, nm
before							
reaction	2.8245	35.86	1.01	0.05	1.125	7.50	-
after							
reaction	2.8542	35.76	1.02	0.05	1.134	7.56	-

Table J1-1.2 50 mM caprylic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before							
reaction	2.5190	35.92	0.90	0.05	1.005	6.70	3.08
after							
reaction	2.5988	35.87	0.93	0.05	1.036	6.91	3.14

Table J1-1.3 70 mM caprylic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before							
reaction	2.3620	35.82	0.85	0.05	0.940	6.27	2.85
after							
reaction	2.6000	35.86	0.93	0.05	1.036	6.91	4.30

Table J1-1.4 100 mM caprylic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before							
reaction	2.1960	35.72	0.78	0.05	0.871	5.81	-
after							
reaction	2.4020	35.84	0.86	0.05	0.957	6.38	-

Table J1-1.5 150 mM caprylic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before							
reaction	1.5685	36.45	0.57	0.05	0.635	4.23	-
after							
reaction	1.5683	36.50	0.57	0.05	0.636	4.24	-

*note W = average water content, wt%

Wt = average weight of total sample, mg

Some data can not be able to measure Rh because of the small size of microemulsion droplets and the interference of ester product affected in low percent in range and meri

2. 200 mM 1-propanol/120 mM NaDEHP/0.5 M NaCl/ 30-150 mM caprylic acid

Table J1-2.1 50 mM caprylic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before							
reaction	1.7637	35.64	0.63	0.05	0.698	5.82	2.51
after							
reaction	1.7650	35.38	0.62	0.05	0.694	5.78	2.52

Table J1-2.2 70 mM caprylic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before							
reaction	1.5150	35.50	0.54	0.05	0.598	4.98	-
after							
reaction	1.5950	34.93	0.56	0.05	0.619	5.16	-

Table J1-2.3 100 mM caprylic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before							
reaction	1.2230	34.67	0.42	0.05	0.471	3.93	-
after							
reaction	1.2620	35.275	0.45	0.05	0.495	4.12	-

Table J1-2.4 150 mM caprylic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before							
reaction	0.9230	35.08	0.32	0.05	0.360	3.00	-
after							
reaction	0.9573	35.245	0.34	0.05	0.375	3.12	-

3. 200 mM 2-propanol/100 mM NaDEHP/0.5 M NaCl/ 30-150 mM caprylic acid

Table J1-3.1 50 mM caprylic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before							
reaction	0.8363	35.05	0.29	0.05	0.326	3.26	2.30
after							
reaction	0.8401	34.97	0.29	0.05	0.326	3.26	2.35

Table J1-3.2 70 mM caprylic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before							
reaction	0.6644	34.42	0.23	0.05	0.254	2.54	-
after							
reaction	0.6776	34.94	0.24	0.05	0.263	2.63	-

Table J1-3.3 100 mM caprylic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before							
reaction	0.4457	34.96	0.16	0.05	0.173	1.73	-
after							
reaction	0.4847	35.285	0.17	0.05	0.190	1.90	-

Table J1-3.4 150 mM caprylic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before							
reaction	0.3785	34.90	0.13	0.05	0.147	1.47	-
after							
reaction	0.3854	34.885	0.13	0.05	0.149	1.49	-

J2 Oleic acid*1. 150 mM hexanol/150 mM NaDEHP/1.0 M NaCl/ 50-150 mM oleic acid***Table J2-1.1** 50 mM oleic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before reaction	2.6938	36.21	0.98	0.05	1.084	7.23	3.25
after reaction	3.0020	36.21	1.09	0.05	1.208	8.05	3.40

Table J2-1.2 70 mM oleic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before reaction	2.3603	36.34	0.86	0.05	0.953	6.35	3.10
after reaction	2.5640	36.34	0.93	0.05	1.035	6.90	3.70

Table J2-1.3 100 mM oleic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before reaction	2.0473	36.31	0.74	0.05	0.826	5.51	-
after reaction	2.2145	36.31	0.80	0.05	0.893	5.96	-

Table J2-1.4 150 mM oleic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before reaction	1.7458	36.45	0.64	0.05	0.707	4.71	-
after reaction	1.7860	36.45	0.65	0.05	0.723	4.82	-

2. 200 mM 1-propanol/120 mM NaDEHP/0.5 M NaCl/ 70 mM oleic acid

Table J2-2.1 70 mM oleic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before reaction	1.7165	35.59	0.61	0.05	0.679	5.66	2.55
after reaction	1.7620	35.46	0.62	0.05	0.694	5.78	2.55

3. 200 mM 2-propanol/100 mM NaDEHP/0.5 M NaCl/ 70 mM oleic acid

Table J3-3.1 70 mM oleic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before reaction	1.4115	35.27	0.50	0.05	0.553	5.53	-
after reaction	1.4045	34.88	0.49	0.05	0.544	5.44	-

J3 Palmatic acid

150 mM hexanol/150 mM NaDEHP/1.0 M NaCl/ 50-100 mM palmatic acid

Table J3-1.1 50 mM palmatic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before reaction	2.5350	36.20	0.92	0.05	1.019	6.80	2.15
after reaction	2.8060	36.20	1.02	0.05	1.128	7.52	2.55

Table J3-1.2 70 mM palmatic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before reaction	2.2965	36.20	0.83	0.05	0.924	6.16	-
after reaction	2.5270	36.20	0.91	0.05	1.016	6.78	-

Table J3-1.3 100 mM palmitic acid

	W, wt%	Wt	Water, mg	V, ml	Water, M	Wo	Rh, nm
before reaction	2.0930	35.94	0.75	0.05	0.836	5.57	-
after reaction	2.2485	35.94	0.81	0.05	0.898	5.99	-

2. 200 mM 1-propanol/120 mM NaDEHP/0.5 M NaCl/ 70 mM palmitic acid

Table J3-2.1 70 mM palmitic acid

	Water, % Wavg, mg	Water, mg	Vol, ml	Water, M	Wo	Rh (nm)	
before reaction	1.6670	36.10	0.60	0.05	0.669	5.57	-
after reaction	1.6610	35.97	0.60	0.05	0.664	5.53	-

3. 200 mM 2-propanol/100 mM NaDEHP/0.5 M NaCl/ 70 mM palmitic acid

Table J3-3.1 70 mM palmitic acid

	Water, % Wavg, mg	Water, mg	Vol, ml	Water, M	Wo	Rh (nm)	
before reaction	1.5675	35.50	0.56	0.05	0.618	6.18	2.60
after reaction	1.5630	35.52	0.56	0.05	0.617	6.17	2.70

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