

**Supplemental Table 1. Muscle functional analysis of the dominant leg.**

Variables – Dominant leg	All HF Subjects (n=31)	Placebo (n=11)		Active (n=14)	
	Baseline	Baseline	Post	Baseline	Post
<b>Isometric</b>					
Peak torque/BW – away (%)	189±9	177±18	200±20	196±10	206±11
Peak torque/BW –toward (%)	81±4	76±6	90±8	90±5	90±5
<b>Isokinetic – 5 repetitions</b>					
Peak torque/BW – extension (%)	150±7	147±17	173±20	153±8	160±9
Peak torque/BW – flexion (%)	64±3	61±6	76±9	70±5	77±4
Work/BW – extension (%)	135±7	132±15	157±17	137±8	149±9
Work/BW – flexion (%)	64±5	61±9	78±12	70±6	80±5
Total work – extension (J)	506±36	477±64	586±69	537±50	603±51
Total work – flexion (J)	225±23	209±35	277±44	264±36	319±33
Average power – extension (W)	69±5	65±10	80±9	75±33	84±7
Average power – flexion (W)	28±3	26±5	37±6	33±5	41±5
Time to peak – extension (msec)	507±20	526±44	404±37	494±27	456±27
Time to peak – flexion (msec)	920±67	828±104	729±45	945±84	780±93
<b>Isokinetic – 25 repetitions</b>					
Peak torque/BW – extension (%)	103±5	103±10	115±10	105±7	108±6
Peak torque/BW – flexion (%)	76±16	55±5	58±4	96±33	67±3
Work/BW – extension (%)	99±6	100±11	111±11	102±7	108±7
Work/BW – flexion (%)	43±3	41±6	51±6	46±6	55±4
Total work – extension (J)	1622±122	1551±200	1806±176	1776±185	1816±168
Total work – flexion (J)	627±71	552±102	765±99	742±118	813±99
Average power – extension (W)	111±9	106±14	128±13	121±13	140±15
Average power – flexion (W)	39±5	26±7	50±7	46±7	56±7
Time to peak – extension (msec)	214±17	195±12	186±12	212±27	177±12
Time to peak – flexion (msec)	498±28	399±61	366±53	546±11	507±32

Post represents 3 months following the intervention. Values expressed at Mean ± SEM

**Supplemental Table 2. Muscle functional analysis of the dominant arm.**

Variables – Dominant arm	All HF Subjects (n=31)	Placebo (n=10)		Active (n=14)	
	Baseline	Baseline	Post	Baseline	Post
<b>Isometric</b>					
Peak torque/BW – away (%)	61±3	65±6	64±6	59±4	61±4
Peak torque/BW –toward (%)	72±3	74±7	74±6	71±4	74±4
<b>Isokinetic – 5 repetitions</b>					
Peak torque/BW – extension (%)	43±2	46±5	48±5	42±3	46±2
Peak torque/BW – flexion (%)	57±3	61±6	56±4	54±3	57±3
Work/BW – extension (%)	49±3	51±6	54±6	47±4	54±3
Work/BW – flexion (%)	67±3	70±7	68±5	65±4	71±4
Total work – extension (J)	179±12	189±23	209±26	184±19	193±18
Total work – flexion (J)	257±16	280±35	272±27	261±22	283±15
Average power – extension (W)	22±2	24±3	26±3	23±3	25±2
Average power – flexion (W)	31±2	35±4	34±4	32±3	34±2
Time to peak – extension (msec)	428±33	426±50	429±65	344±26	469±45
Time to peak – flexion (msec)	917±54	806±89	808±77	1003±76	996±80
<b>Isokinetic – 25 repetitions</b>					
Peak torque/BW – extension (%)	36±2	37±3	38±4	35±2	36±2
Peak torque/BW – flexion (%)	53±2	56±5	55±4	50±3	51±3
Work/BW – extension (%)	37±2	38±4	41±4	36±3	39±2
Work/BW – flexion (%)	58±3	63±6	60±5	55±3	58±3
Total work – extension (J)	575±42	590±72	655±83	612±65	598±50
Total work – flexion (J)	989±62	1108±141	1079±118	992±74	987±55
Average power – extension (W)	35±3	37±5	40±6	38±5	36±4
Average power – flexion (W)	56±4	64±9	62±8	57±5	57±4
Time to peak – extension (msec)	407±33	376±58	417±54	417±50	314±47
Time to peak – flexion (msec)	451±29	435±52	420±48	426±42	426±43

Post represents 3 months following the intervention. Values expressed at Mean ± SEM

**Supplemental Table 3. Muscle functional analysis of the non-dominant leg.**

Variables – Non-dominant leg	All HF Subjects (n=29)	Placebo (n=11)		Active (n=13)	
	Baseline	Baseline	Post	Baseline	Post
<b>Isometric</b>					
Peak torque/BW – away (%)	173±46	168±16	181±21	134±10	194±12
Peak torque/BW –toward (%)	76±24	73±8	83±8	83±6	88±7
<b>Isokinetic – 5 repetitions</b>					
Peak torque/BW – extension (%)	143±47	144±16	166±20	143±11	157±9
Peak torque/BW – flexion (%)	67±22	66±6	71±7	72±5	75±5
Work/BW – extension (%)	128±42	130±13	144±17	129±11	145±8
Work/BW – flexion (%)	67±26	66±8	71±10	75±6	78±6
Total work – extension (J)	490±36	476±58	550±70	527±58	583±46
Total work – flexion (J)	243±24	226±35	261±41	290±36	310±35
Average power – extension (W)	67±5	65±9	78±11	73±8	82±6
Average power – flexion (W)	31±3	30±5	36±6	37±5	40±5
<b>Isokinetic – 25 repetitions</b>					
Peak torque/BW – extension (%)	97±29	100±10	110±11	100±7	106±6
Peak torque/BW – flexion (%)	62±17	60±4	57±5	67±5	68±5
Work/BW – extension (%)	93±30	94±9	104±11	97±8	106±6
Work/BW – flexion (%)	47±19	48±5	49±7	52±5	52±5
Total work – extension (J)	1580±123	1551±193	1766±215	1733±194	1825±146
Total work – flexion (J)	700±78	700±116	722±131	802±127	780±101
Average power – extension (W)	109±9	109±15	124±16	119±13	126±10
Average power – flexion (W)	44±5	46±8	47±9	49±8	48±7

Post represents 3 months following the intervention. Values expressed at Mean ± SEM

**Supplemental Table 4. Muscle functional analysis of the non-dominant arm.**

Variables – Non-dominant arm	All HF Subjects (n=29)	Placebo (n=11)		Active (n=13)	
	Baseline	Baseline	Post	Baseline	Post
<b>Isometric</b>					
Peak torque/BW – away (%)	56±21	53±6	63±8	56±5	61±4
Peak torque/BW –toward (%)	67±19	69±7	68±7	64±4	69±4
<b>Isokinetic – 5 repetitions</b>					
Peak torque/BW – extension (%)	41±14	41±5	46±5	41±3	43±3
Peak torque/BW – flexion (%)	55±16	58±7	55±6	52±3	55±3
Work/BW – extension (%)	45±17	43±6	52±6	46±4	49±4
Work/BW – flexion (%)	64±21	65±6	66±6	63±5	66±4
Total work – extension (J)	170±14	159±24	197±26	187±22	194±16
Total work – flexion (J)	249±18	254±40	263±30	260±25	264±19
Average power – extension (W)	23±2	24±4	26±4	23±3	24±2
Average power – flexion (W)	31±2	35±5	34±5	31±3	33±3
<b>Isokinetic – 25 repetitions</b>					
Peak torque/BW – extension (%)	34±9	35±4	37±3	34±2	34±2
Peak torque/BW – flexion (%)	51±13	55±5	53±5	48±3	48±3
Work/BW – extension (%)	34±14	32±5	39±4	35±3	37±3
Work/BW – flexion (%)	53±17	53±6	59±6	52±4	54±3
Total work – extension (J)	526±50	508±85	614±92	583±78	553±72
Total work – flexion (J)	901±70	957±148	1010±115	921±99	933±78
Average power – extension (W)	32±3	33±6	39±6	35±5	34±5
Average power – flexion (W)	49±4	57±10	60±8	47±6	54±5

Post represents 3 months following the intervention. Values expressed at Mean ± SEM

**Supplemental Table 5. Lipidomic analysis of circulating fatty acid profiles.**

	All Subjects	Placebo			Active			Overall p-value
	Baseline	Baseline	1 month	3 months	Baseline	1 month	3 months	
<b>Total Free Fatty Acids</b>	333.1±47.3	232.4±30.1	340.5±34.8	381.7±34.1	421.2±79.5	314.3±28.8	438.8±47.4	0.066
<b>C14 Myristic Acid</b>	10.9±1.7	7.8±1.6	9.0±1.2	15.6±3.3	13.7±2.8	10.6±1.0	13.9±2.6	0.12
<b>C16:1 Palmitoleic Acid</b>	9.9±1.6	6.9±1.5	7.6±1.3	8.1±1.0	12.5±2.6	8.9±1.0	13.7±2.6	0.074
<b>C16 Palmitic Acid</b>	72.4±10.8	49.0±6.9	63.7±7.5	70.5±6.3	92.9±18.1	59.0±5.4	93.4±12.2	0.03
<b>C18:3 <math>\alpha</math>-Linolenic Acid</b>	8.3±1.4	5.3±0.9	5.8±1.1	8.1±1.4	11.0±2.4	8.0±1.0	12.0±1.6	0.04
<b>C18:2 Linoleic Acid</b>	76.2±9.4	57.3±6.8	114.6±13	128.6±17.8* <sup>#</sup>	92.8±15.6	60.1±7.3* <sup>#</sup>	94.0±10.4	0.0005
<b>C18:1 Oleic Acid</b>	100.6±15.8	67.1±9.6	86.7±11.5	95.4±8.9	129.9±26.7	88.0±13.3	124.8±15.6	0.06
<b>C18 Stearic Acid</b>	35.8±6.7	24.2±3.2	33.3±2.8	35.1±3	46.0±11.9	25.7±2.1	43.4±5.2	0.09
<b>C20:5 Eicosapentaenoic Acid</b>	0.96±0.2	0.6±0.1	0.47±0.07	0.83±0.2	1.3±0.3	10.3±0.6* <sup>#</sup>	7.3±1.5*	<0.0001
<b>C20:4 Arachidonic Acid</b>	8.9±0.6	8.1±0.7	10.1±1.2	9.4±0.9	9.7±0.9	8.8±0.5	10.0±1.0	0.56
<b>C20:1 Eicosenoic Acid</b>	1.7±0.6	0.87±0.1	1.1±0.14	1.7±0.5	2.4±1.1	4.7±0.7* <sup>#</sup>	3.8±0.8*	0.002
<b>C20 Arachidic Acid</b>	0.58±0.2	0.34±0.03	0.5±0.06	0.58±0.1	0.79±0.3	0.54±0.02	0.6±0.1	0.51
<b>C22:6 Docosahexaenoic Acid</b>	4.7±0.6	3.7±0.5	3.8±0.4	5.3±1.0	5.6±0.9	22.7±2.0* <sup>#</sup>	18.1±3.3* <sup>#</sup>	<0.0001
<b>C22:1 Erucic Acid</b>	0.58±0.4	0.17±0.05	0.08±0.009	0.55±0.5	0.94±0.8	3.7±0.7* <sup>#</sup>	1.9±0.8* <sup>#</sup>	0.0003
<b>C22 Behenic Acid</b>	0.34±0.07	0.23±0.02	0.35±0.04	0.41±0.06	0.45±0.1	0.43±0.03	0.37±0.04	0.20
<b>C24:1 Nervonic Acid</b>	0.49±0.1	0.39±0.07	0.71±0.06	0.85±0.2	0.57±0.2	2.1±0.3* <sup>#</sup>	1.1±0.2*	<0.0001
<b>C24 Lignoceric Acid</b>	0.58±0.08	0.47±0.04	0.74±0.09	0.76±0.1	0.67±0.1	0.78±0.2	0.56±0.05	0.24

\*p<0.5 vs. baseline; <sup>#</sup>p<0.05 between groups; concentration of all fatty acid species in  $\mu$ M.

Values expressed at Mean  $\pm$  SEM

**Supplemental Table 6. Lipidomic analysis of circulating ceramide profiles.**

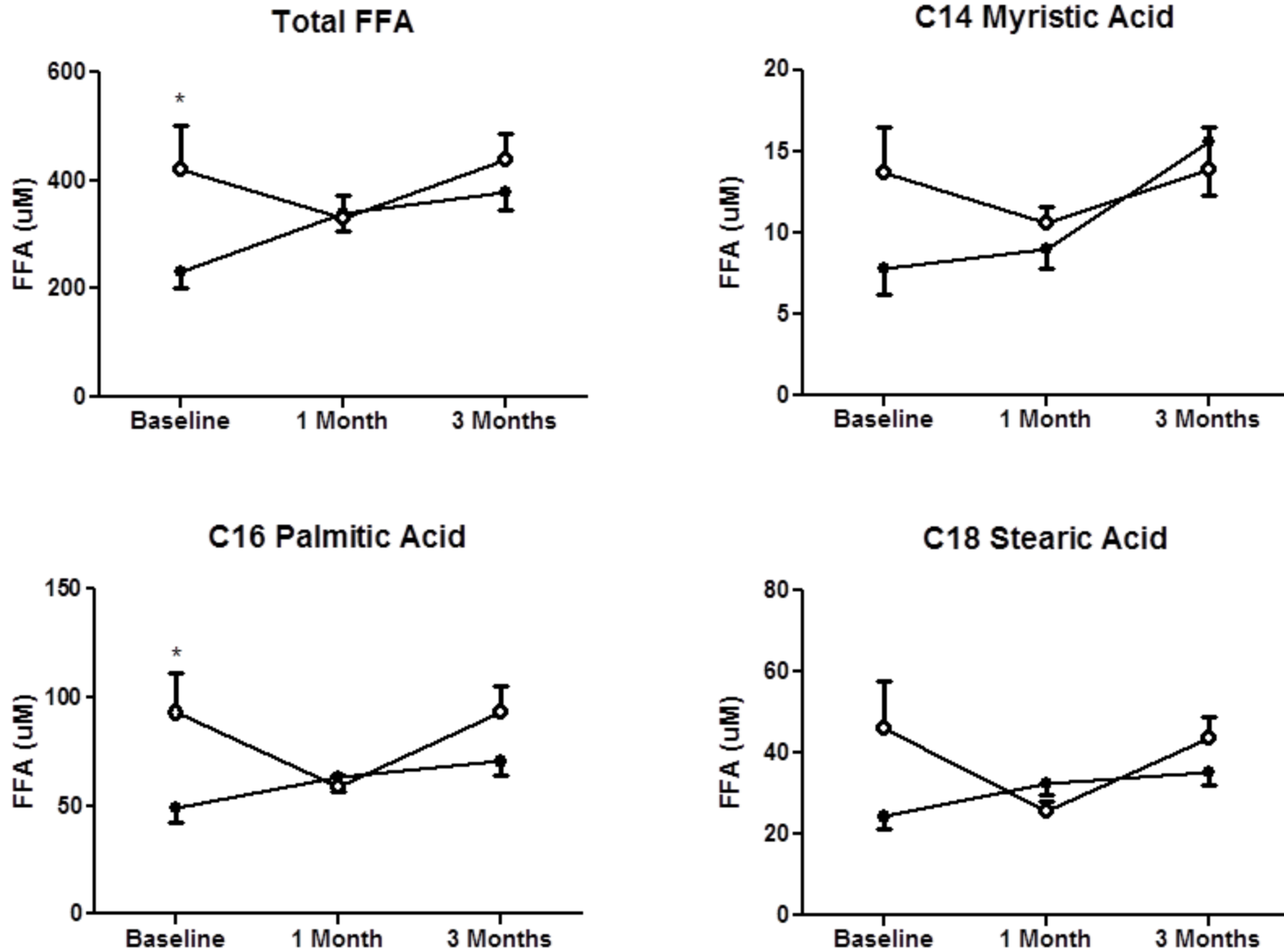
	All Subjects	Placebo			Active			Overall p-value
	Baseline	Baseline	1 month	3 months	Baseline	1 month	3 months	
<b>Total ceramides</b>	5.5±0.3	5.5±0.4	5.2±0.4	5.1±0.5	5.5±0.4	4.2±0.16	5.13±0.5	0.16
<b>C14</b>	0.008±0.0009	0.009±0.002	0.007±0.002	0.008±0.002	0.007±0.001	0.008±0.001	0.007±0.001	0.76
<b>C16:1</b>	0.11±0.008	0.11±0.009	0.1±0.01	0.1±0.01	0.11±0.01	0.08±0.006	0.09±0.008	0.06
<b>C16</b>	0.32±0.02	0.3±0.03	0.27±0.02	0.29±0.02	0.33±0.03	0.25±0.01	0.29±0.03	0.24
<b>C18:1</b>	0.06±0.006	0.06±0.005	0.05±0.009	0.04±0.008	0.06±0.01	0.05±0.002	0.06±0.008	0.37
<b>C18</b>	0.14±0.01	0.13±0.02	0.11±0.01	0.11±0.007	0.14±0.02	0.11±0.01	0.15±0.03	0.49
<b>C20:1</b>	0.01±0.001	0.01±0.002	0.01±0.003	0.01±0.002	0.01±0.002	0.006±0.0006	0.006±0.001	0.054
<b>C20</b>	0.012±0.001	0.01±0.001	0.01±0.002	0.01±0.002	0.01±0.001	0.01±0.001	0.01±0.002	0.66
<b>C22:1</b>	0.07±0.02	0.06±0.006	0.06±0.008	0.06±0.01	0.08±0.01	0.04±0.003	0.06±0.008	0.03
<b>C22</b>	0.25±0.02	0.25±0.02	0.21±0.02	0.23±0.03	0.26±0.04	0.17±0.01	0.25±0.04	0.30
<b>C24:1</b>	1.3±0.06	1.27±0.08	1.19±0.12	1.16±0.12	1.33±0.1	1.13±0.03	1.32±0.11	0.56
<b>C24</b>	3.22±0.16	3.27±0.24	3.17±0.21	3.02±0.27	3.17±0.22	2.8±0.21	2.89±0.3	0.71

Concentration of all fatty acid species in  $\mu\text{M}$ . Values expressed at Mean  $\pm$  SEM

**Supplemental Table 7. Analysis of circulating amino acid profiles.**

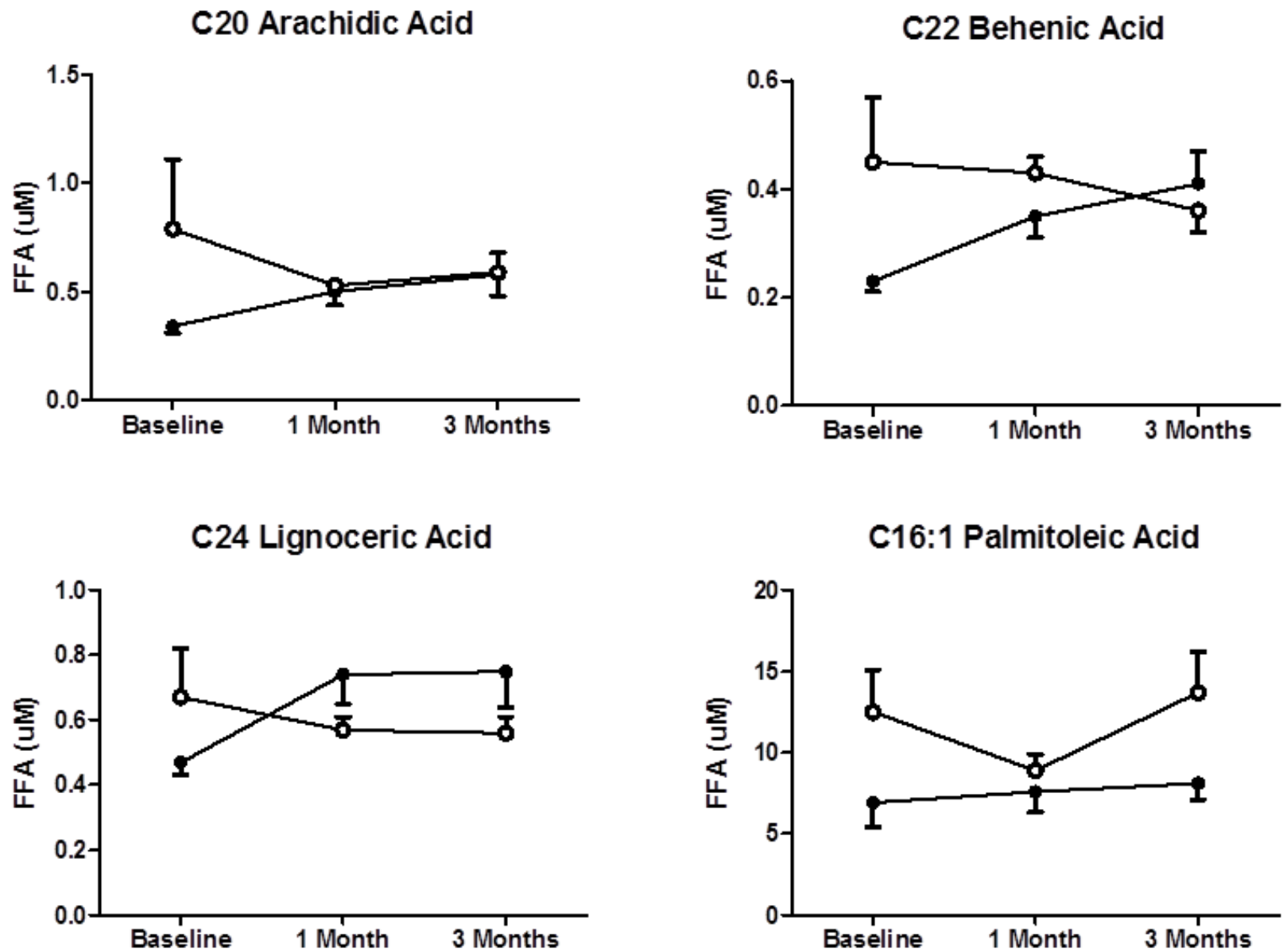
	All Subjects	Placebo			Active			Overall p-value
	Baseline	Baseline	1 month	3 months	Baseline	1 month	3 months	
<b>Glutamate</b>	42.7±3.2	43.8±4.3	46.6±7.2	58.8±11.0	41.8±4.8	48.4±6.5	41.1±4.7	0.49
<b>H-Proline</b>	23.6±2.5	25.7±3.6	25.8±4.1	24.0±5.1	21.8±3.4	22.4±4.6	18.1±2.3	0.71
<b>Serine</b>	86.8±4.7	90.2±6.3	87.6±6.4	81.6±3.9	84.0±6.8	84.5±6.7	86.3±4.4	0.96
<b>Asparagine</b>	40.4±2.0	40.6±2.1	42.8±3.8	42.1±4.2	40.2±3.3	40.2±3.1	39.1±2.6	0.97
<b>Glycine</b>	225±10	249±11	245±14	219±15	205±13	233±19	216±17	0.24
<b>Glutamine</b>	528±16	548±24	567±32	510±36	511±21	556±38	530±28	0.68
<b>Taurine</b>	112±9	129±18	118±18	140±29	98±7	102±9	85±10	0.11
<b>Histidine</b>	86.4±3.4	93.6±5.1	91.9±4.4	92.6±3.7	80.4±4	85.9±6.3	81.4±3.9	0.18
<b>Citrulline</b>	33.3±2.6	39.4±3.9	41.1±3.2	34.0±3.5	28.2±3.1	32.6±3.6	27.1±3.9	0.03
<b>Threonine</b>	113±10	127±16	117±8.5	114±8.6	102±12	96±7	94±6	0.20
<b>Alanine</b>	511±27	498±29	525±36	461±48	521±45	629±48	556±48	0.17
<b>Arginine</b>	62.3±4.6	67.5±7.9	76.1±5.9	72.0±8.0	58.0±5.3	65.6±3.9	61.5±7.5	0.38
<b>Proline</b>	308±22	323±33	312±24	277±24	295±29	322±28	295±30	0.89
<b>Tyrosine</b>	86.9±4.2	97.5±6.4	91.9±5.7	90.2±4.4	78.2±4.6	85.5±5.3	86.4±7.9	0.25
<b>Valine</b>	279±10	284±17	282±15	283±21	275±12	293±26	293±17	0.98
<b>Methionine</b>	33.6±2.4	35.5±3.3	37.6±2.9	36.0±3.8	31.9±3.5	34.4±2.7	34.2±3.2	0.87
<b>Cystine</b>	16.6±1.5	19.9±1.9	17.9±2.2	16.6±3.0	13.8±1.9	18.1±2.4	14.1±1.5	0.24
<b>Isoleucine</b>	82.1±4.8	85.6±8.0	87.2±7.5	90.2±11.1	79.2±5.9	86.8±8.5	87.6±9.1	0.95
<b>Leucine</b>	143±6.9	149±12	146±10	150±16	138±8	145±13	153±13	0.95
<b>Phenylalanine</b>	79.6±3.1	84.5±5.2	80.7±4.1	82.7±4.1	75.6±3.6	83.6±6.1	81.8±6.2	0.80
<b>Tryptophan</b>	59.7±3.0	67.2±4.8	61.5±6.1	65.6±6.1	53.5±3.2	58.8±4.5	58.0±4.3	0.36
<b>Ornithine</b>	77.4±3.7	87.1±5.3	89.9±7.1	80.0±7.8	69.5±4.3	75.6±6.1	73.3±8.9	0.17
<b>Lysine</b>	183±7	194±9	213±15	206±16	174±9	201±18	187±14	0.34

Concentration of all amino acid species in umol/l. Values expressed at Mean ± SEM

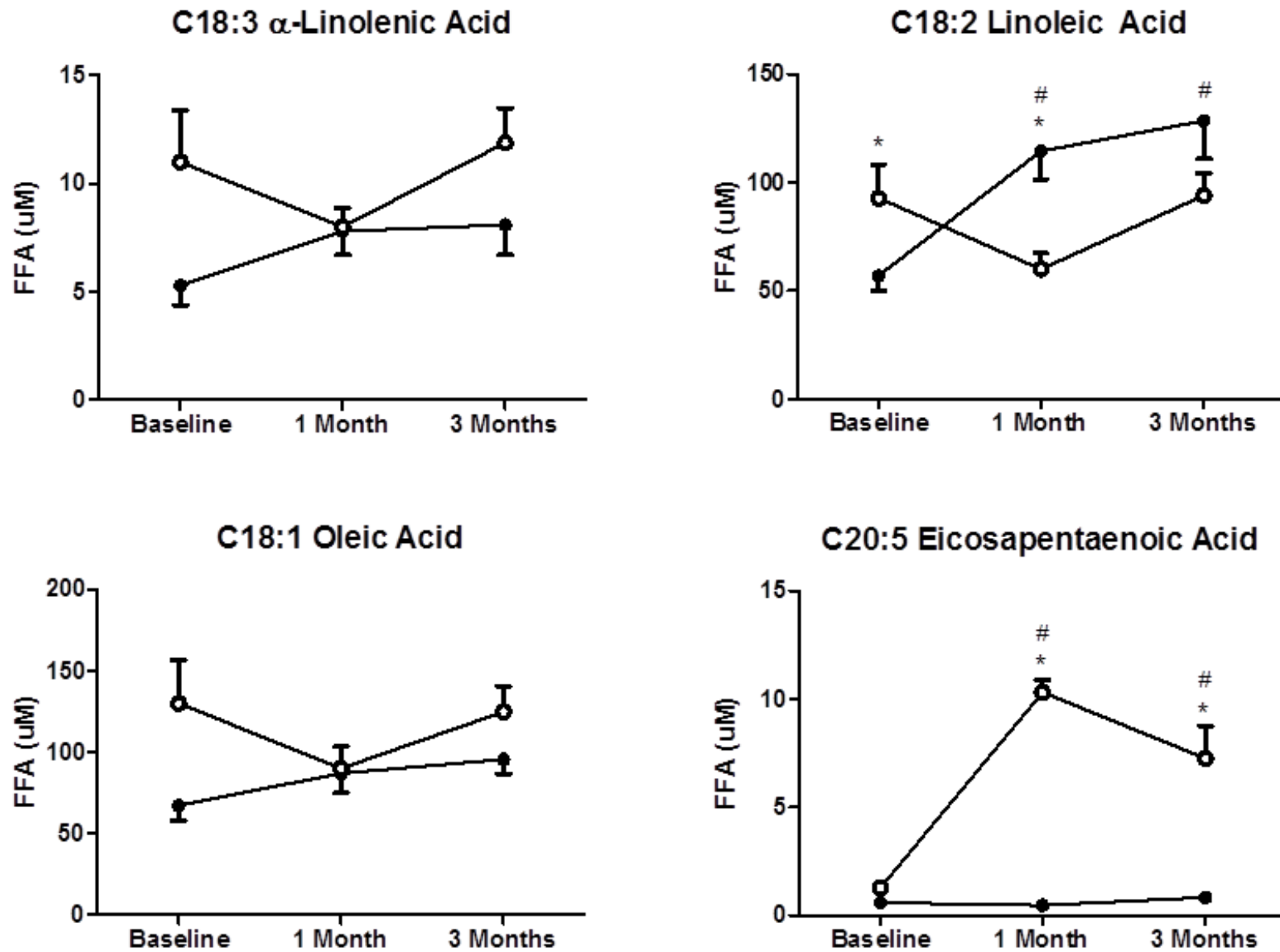


Supplemental Figure 1A. Dynamics in circulating total, saturated and unsaturated fatty acid levels. Open circles = active treatment, closed circles = placebo treatment.

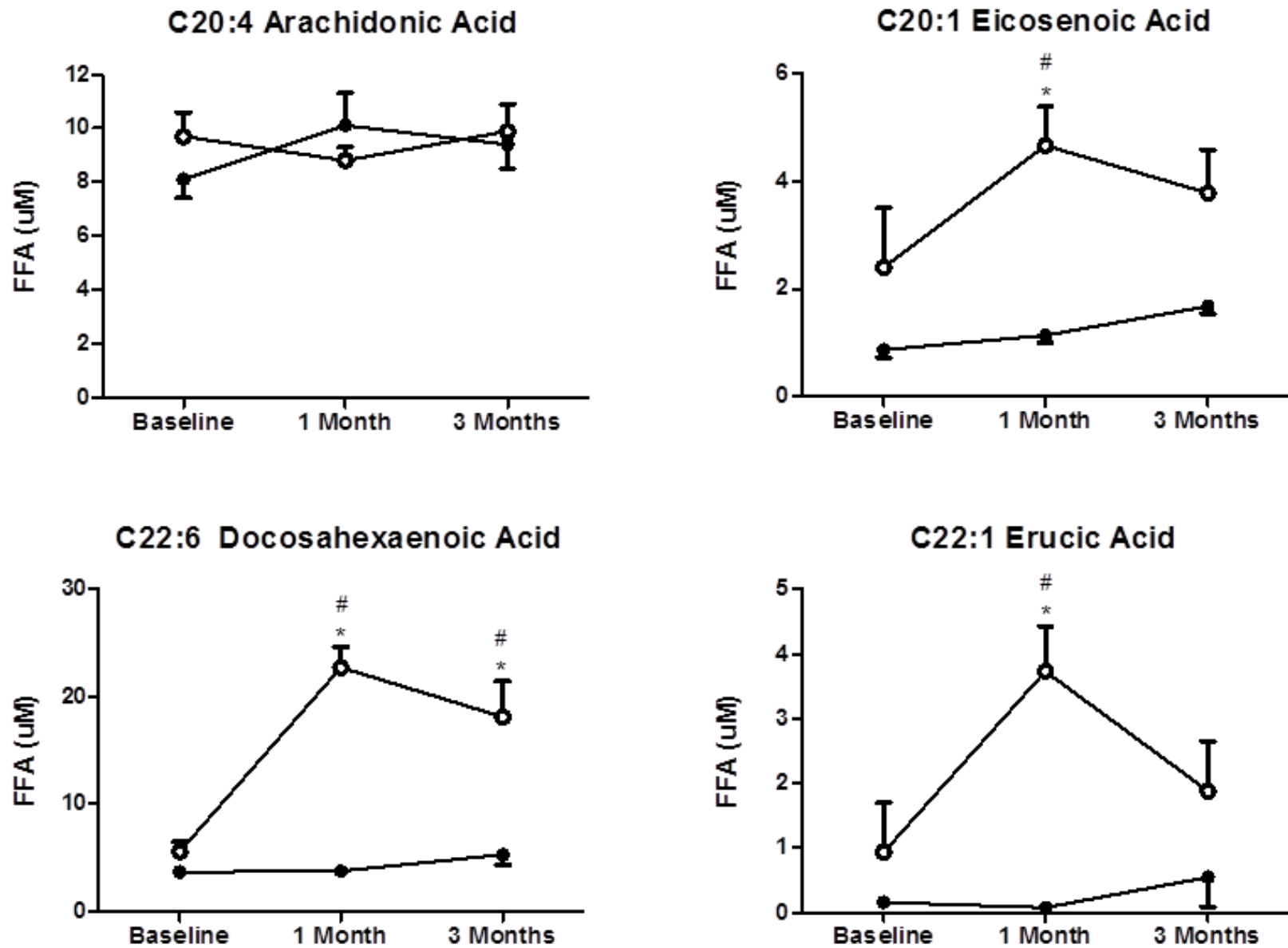




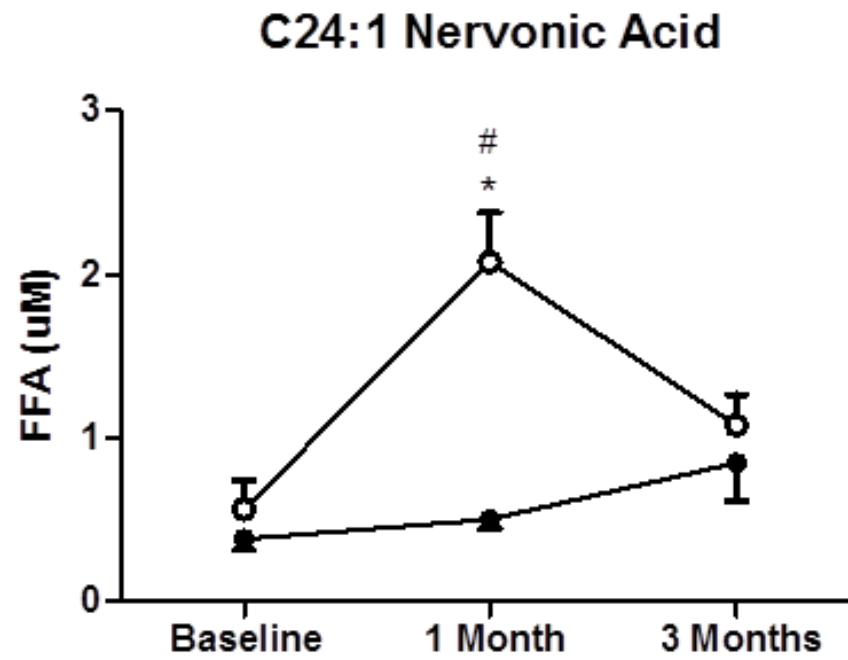
Supplemental Figure 1B. Dynamics in circulating total, saturated and unsaturated fatty acid levels. Open circles = active treatment, closed circles = placebo treatment.



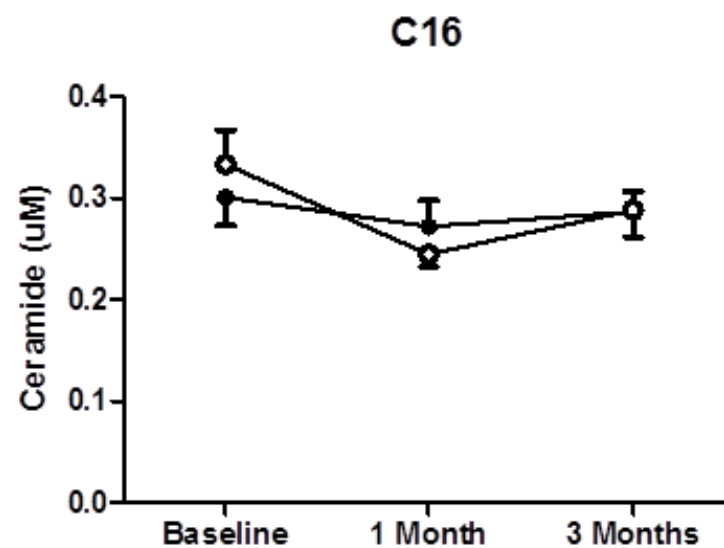
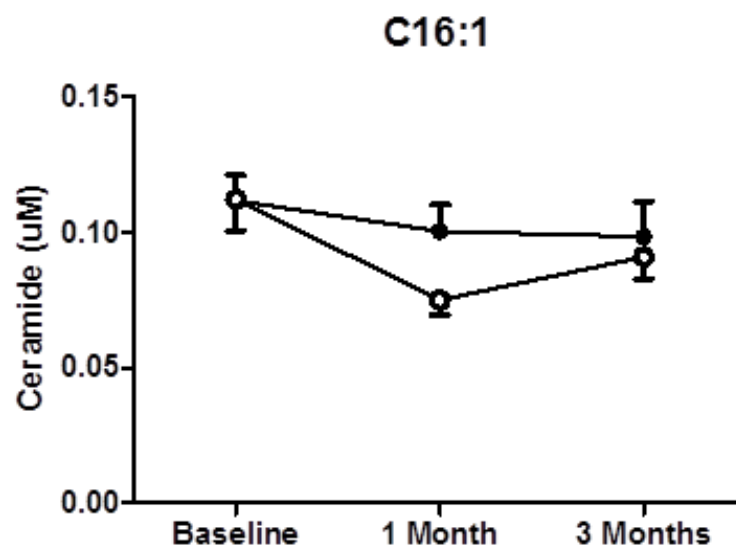
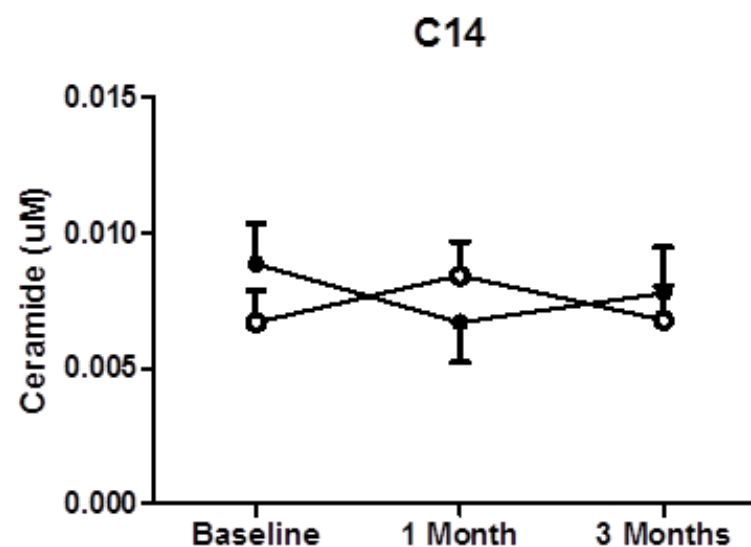
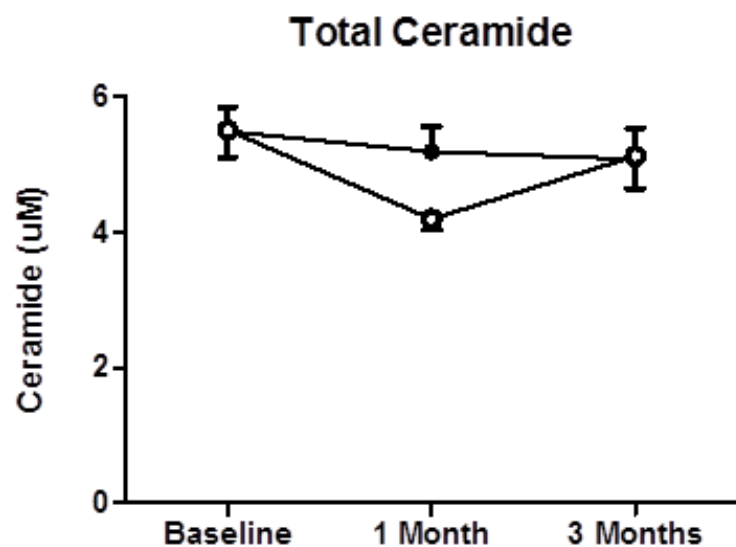
Supplemental Figure 1C. Dynamics in circulating total, saturated and unsaturated fatty acid levels. Open circles = active treatment, closed circles = placebo treatment.



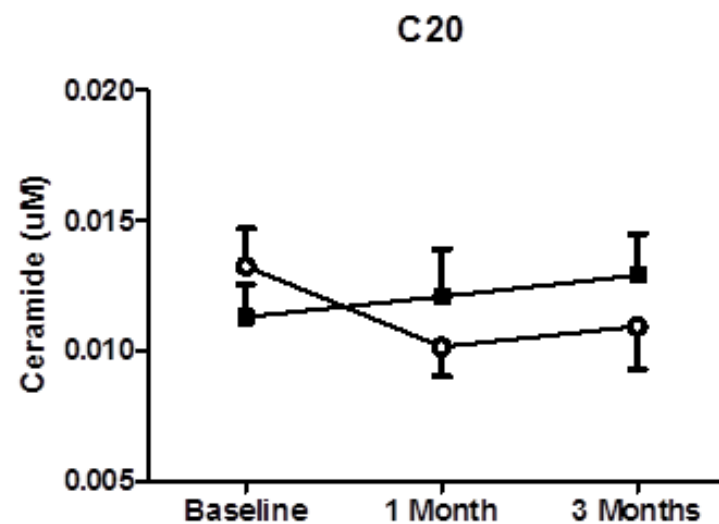
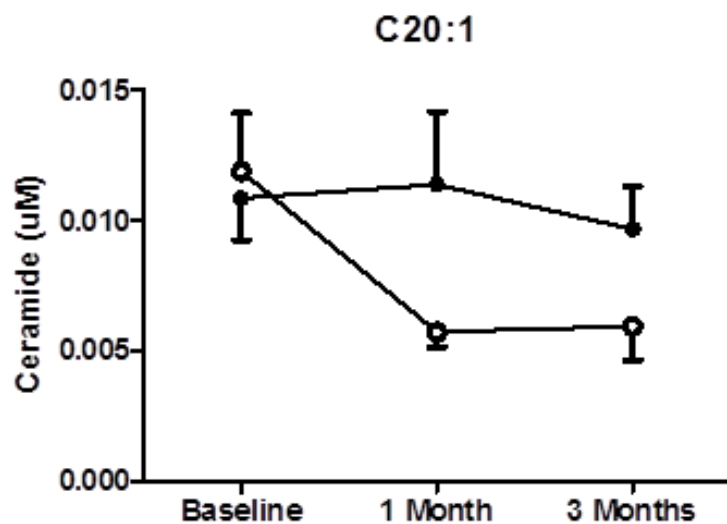
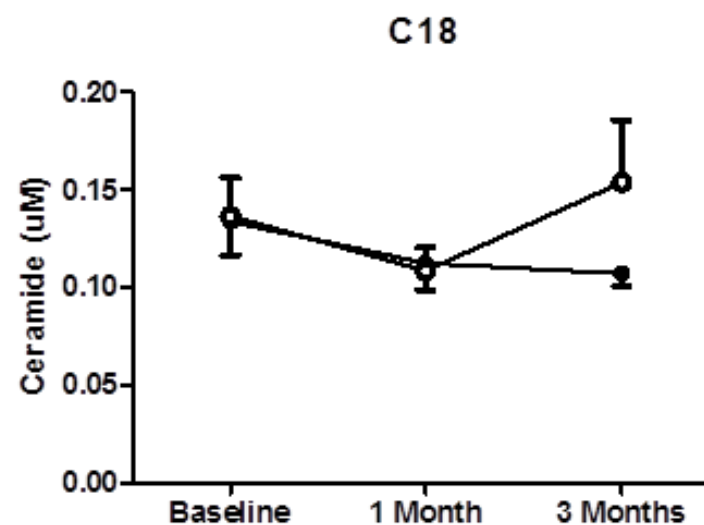
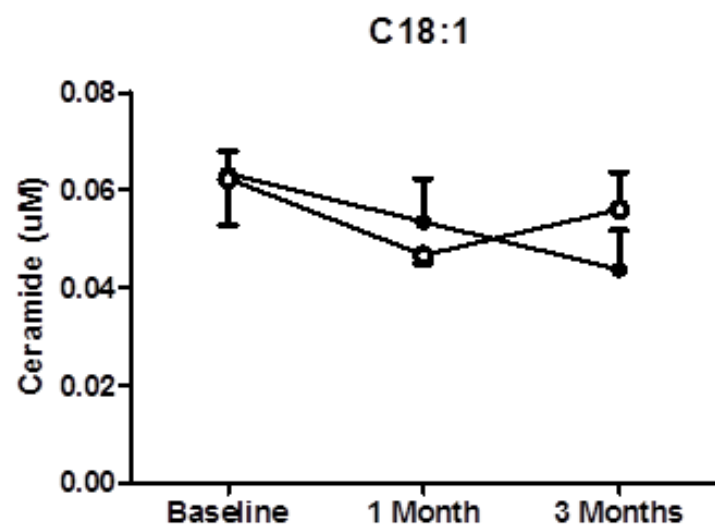
Supplemental Figure 1D. Dynamics in circulating total, saturated and unsaturated fatty acid levels. Open circles = active treatment, closed circles = placebo treatment.



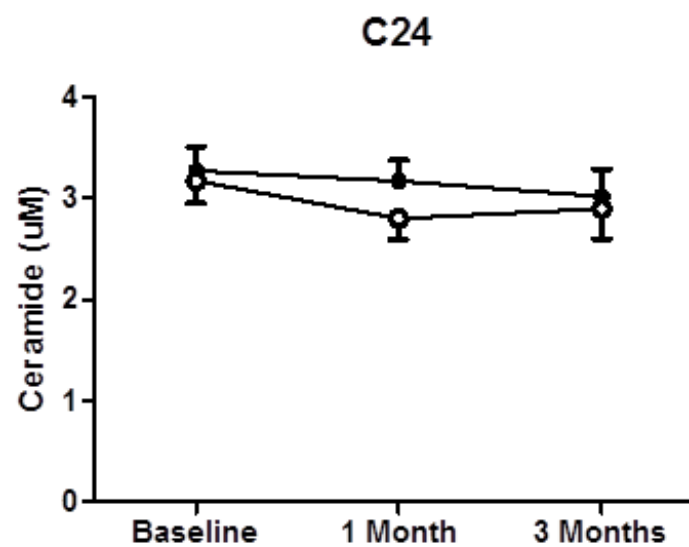
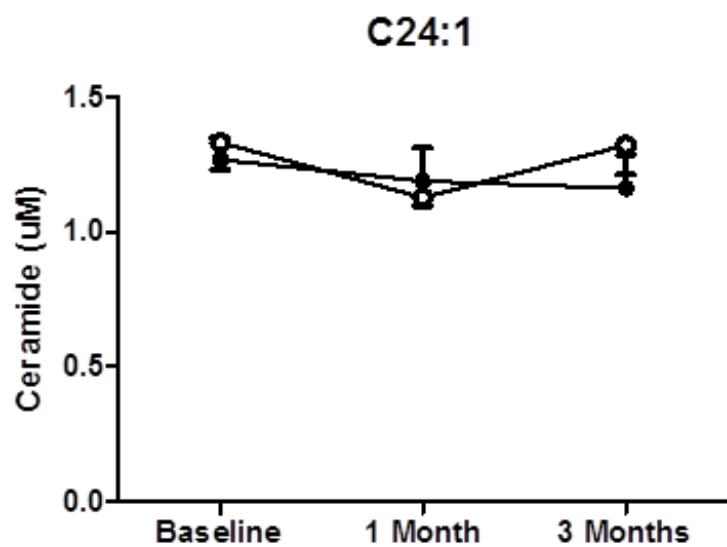
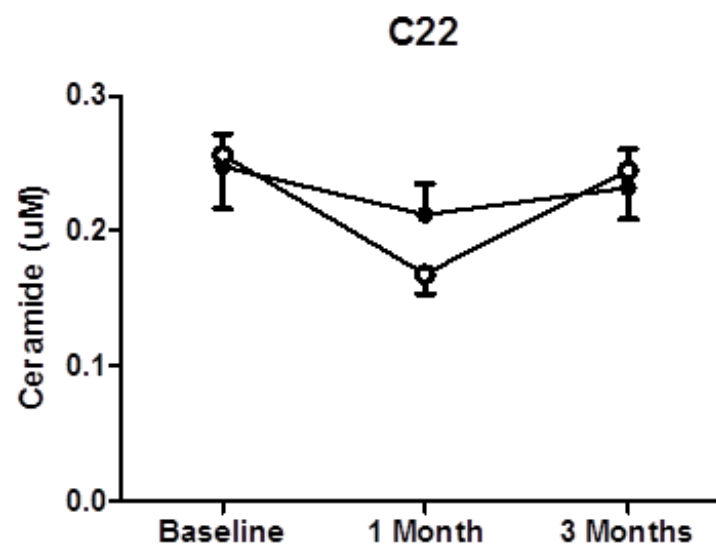
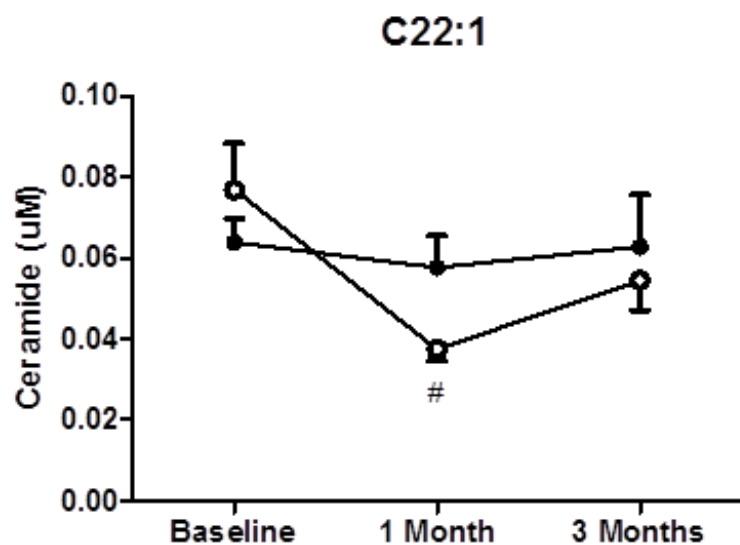
Supplemental Figure 1E. Dynamics in circulating total, saturated and unsaturated fatty acid levels. Open circles = active treatment, closed circles = placebo treatment.



**Supplemental Figure 2A. Dynamics in total and individual circulating ceramide species. Open circles = active treatment, closed circles = placebo treatment.**



**Supplemental Figure 2B. Dynamics in total and individual circulating ceramide species. Open circles = active treatment, closed circles = placebo treatment.**



**Supplemental Figure 2C. Dynamics in total and individual circulating ceramide species. Open circles = active treatment, closed circles = placebo treatment.**