

Supplementary information

Storage duration and added docosahexaenoic acid modify the rate of esterified and free oxylipin formation Infant Milk formula.

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Table S1. List of chemicals used in the present research.

Chemical	Cat#	Company
Instant nonfat dry milk, canola oil, and lecithin	-	Local grocery store (Davis, CA, US).
Maltodextrin	-	Grain Processing Corporation (Muscatine, IA, US)
Docosahexaenoic acid ethyl ester (DHA)	9090310	Cayman Chemicals (Ann Arbor, MI, USA).
Acetic acid	695092	
Butylated hydroxytoluene (BHT)	W218405-SAMPLE-K	
Ethylenediaminetetraacetic acid disodium salt dihydrate (2Na-EDTA)	E5134-50 g,	Sigma-Aldrich (St. Louis., MO, USA)
Ethylenediaminetetraacetic acid (EDTA)	EDS-100G	
Triphenylphosphine (TPP)	3T84409	
Sodium carbonate (Na ₂ CO ₃)	791768-500G	
Sodium hydroxide (NaOH)	S5881-500G	
Acetonitrile	A956-1	Fisher Scientific (Hampton, NH, USA)
Chloroform HPLC grade	C607-4	
Ethyl acetate	E196-4	
Methanol	A454-4	
Methanol LC-MS grade	A456-4	
Deuterated and unlabeled oxylipin standards	(d11-11,12-epoxyeicosatrienoic acid (EpETrE - Cat #10006413), d11-14,15-dihydroxyeicosatrienoic acid (DiHETrE - Cat #1008040), d4-6-keto-prostaglandin (PG) F1 α (Cat #315210), d4-9-hydroxyoctadecadienoic acid (HODE - Cat #338410), d4-leukotriene B4 (LTB4 - Cat #320110), d4- prostaglandin (PG) E2 (Cat #314010), d4-thromboxane B2 (TXB2 - Cat #319030), d6-20-hydroxyeicosatetraenoic acid (HETE - Cat #390030) and d8-5-hydroxyeicosatetraenoic acid (HETE - Cat #334230), and unlabeled oxylipin standards	Cayman Chemical (Ann Arbor, MI, USA).
SPE cartridge (Waters Oasis HLB -3 cc, 60 mg sorbent, 30 μ m particle size)	WAT094226	Waters Corporation, Milford, CA, USA
Vial inserts	WAT094171	
Ultrafree-MC VV 0.1 μ m	UFC30VV00	Millipore Sigma, Burlington, MA, USA
LCMS vials	AR0-3911-13	Phenomenex, Torrance, CA, US
Pre-slit caps	AR0-8972-13-B	

Table S2. Precursor ion, product ion, fragmentor voltage, collision energy, and retention time deuterated and oxylipins standards by UPLC-MS/MS.

Compound abbreviation	Deuterated standards used	Precursor Ion (m/z)	Product Ion	Fragmentor voltage (V)	Collision Energy (V)	Retention time (min)
Deuterated standards (surrogate)						
d-11-11(12)EpETrE	-	330.2	167.2	80	7	23.5
d11-14,15-DiHETrE	-	348.2	207.1	125	10	13.8
d4-6-keto-PGF1a	-	373.3	167.1	90	19	4.7
d4-9HODE	-	299.2	172.3	90	13	18
d4-LTB4	-	339.2	197.2	80	10	11.4
d4-PGE2	-	355.2	275.3	90	7	7
d4-TXB2	-	373.3	173.2	105	10	6
d6-20-HETE	-	325.2	281.2	110	7	16.5
d8-5-HETE	-	327.2	116.1	75	7	21.2
LA derived oxylipin standards						
9-HODE	d4-9HODE	295.2	171.1	120	10	18
13-HODE	d4-9HODE	295.2	195.2	95	13	18
9-oxo-ODE	d6-20-HETE	293.2	185.1	90	13	20
13-oxo-ODE	d6-20-HETE	293.2	195.1	95	13	19.3
9(10)-EpOME	d11-11(12)-EpETrE	295.3	171.1	100	7	22.8
12(13)-EpOME	d11-11(12)-EpETrE	295.3	195.2	95	7	22.5
9,10-DiHOME	d11-11(12)-EpETrE	313.2	201.2	130	16	12.42
12,13-DiHOME	d11-11(12)-EpETrE	313.2	183.2	130	16	12.7
9,10,13-TriHOME	d4-TXB2	329.2	171.1	110	16	6.7
9,12,13-TriHOME	d4-TXB2	329.2	211.1	125	16	6.6
ALA-derived oxylipin standards						
9-HOTrE	d4-9HODE	293.2	171.2	110	4	15.3
13-HOTrE	d4-9HODE	293.2	195.1	125	10	15.6
DHA derived oxylipin standards						
10(11)-EpDPE	d11-11(12)-EpETrE	343.2	153.2	90	4	23.6
13(14)-EpDPE	d11-11(12)-EpETrE	343.2	193.2	80	4	23.4
16(17)-EpDPE	d11-11(12)-EpETrE	343.2	233.2	130	4	23.3
19(20)-EpDPE	d11-11(12)-EpETrE	343.2	241.2	130	7	22.5
17-HDoHE	17-HDoHE	343.2	281.2	95	4	19.5

Abbreviations: EpETrE (epoxyeicosatrienoic acid), HETE (hydroxyeicosatetraenoic acid), EpDPE (epoxydocosapentanoic acid), HDoHE (hydroxydocosahexaenoic acid), EpOME (epoxyoctadecenoic acid); DiHOME (dihydroxyoctadecenoic acid), TriHOME (trihydroxyoctadecenoic acid), HODE (hydroxyoctadecadienoic acid), oxo-ODE (oxo-octadecadienoic acid), HOTrE (hydroxyoctadecatrienoic acid) DiHETrE (dihydroxyicosatrienoic acid), HEPE (hydroxyeicosapentaenoic acid) and TXB2 (thromboxane B2).

Table S3. Relative standard deviation (RSD) for the recovery assays for Formulas 1 and 2 under 21 storage days.

Compounds	Day 0		Day 01		Day 03		Day 07		Day 14		Day 21	
LA derived	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2
9-HODE	3.0%	8.4%	6.6%	4.8%	9.4%	11.4%	3.1%	0.6%	5.6%	16.8%	2.3%	6.1%
13-HODE	3.1%	4.9%	6.6%	4.8%	9.4%	12.7%	3.1%	0.6%	5.6%	11.5%	2.3%	6.1%
9-oxo-ODE	4.3%	7.9%	5.6%	6.7%	6.0%	9.9%	7.9%	5.7%	3.1%	10.2%	0.8%	4.7%
13-oxo-ODE	9.5%	7.7%	5.6%	6.7%	17.9%	10.8%	7.9%	5.7%	2.9%	9.1%	0.8%	4.9%
12(13)-EpOME	9.2%	5.3%	8.9%	9.2%	9.3%	5.8%	1.7%	0.6%	5.4%	10.1%	7.9%	3.6%
9(10)-EpOME	11.8%	6.3%	9.3%	9.8%	9.1%	6.4%	1.7%	0.6%	5.4%	10.2%	7.8%	3.9%
9,10-DiHOME	4.3%	6.8%	4.1%	4.4%	11.3%	11.9%	1.0%	5.9%	5.0%	9.8%	2.0%	6.0%
12,13-DiHOME	4.3%	6.7%	3.4%	4.3%	11.5%	11.9%	1.0%	5.9%	5.0%	9.9%	4.5%	6.0%
9,10,13-TriHOME	10.5%	8.0%	4.3%	5.9%	9.0%	7.6%	7.0%	7.2%	3.9%	6.7%	2.1%	5.5%
9,12,13-TriHOME	4.0%	5.4%	9.0%	4.1%	9.0%	6.1%	5.2%	9.1%	1.7%	12.0%	2.8%	4.2%
ALA derived												
9-HOTrE	2.3%	4.8%	6.0%	4.8%	9.4%	15.7%	2.9%	7.2%	5.6%	18.3%	2.3%	5.0%
13-HOTrE	2.2%	4.8%	6.5%	5.0%	10.0%	16.7%	3.0%	0.6%	5.5%	16.6%	2.1%	8.5%
DHA derived												
10(11)EpDPE	8.4%	5.7%	9.3%	6.6%	7.0%	18.2%	1.7%	10.8%	5.3%	9.4%	8.0%	4.2%
13(14)EpDPE	8.6%	6.3%	9.3%	13.5%	7.4%	15.6%	1.7%	7.5%	5.6%	12.0%	7.9%	3.9%
16(17)-EpDPE	8.9%	3.6%	9.3%	17.8%	7.4%	16.0%	1.7%	12.4%	5.4%	16.7%	7.7%	5.7%
19(20)-EpDPE	9.0%	3.5%	4.1%	17.1%	8.5%	13.7%	6.6%	7.1%	5.0%	17.3%	0.9%	5.7%
17-HDoHE	3.3%	4.8%	6.5%	4.9%	10.2%	16.7%	3.1%	0.6%	5.6%	18.6%	2.2%	6.0%

Table S4. Concentration of total, free, and esterified 9-HODE in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

9-HODE				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L)*	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	56.47 ± 3.88	10.86 ± 2.96	45.62 ± 4.43	81%
F1 Day 1	69.13 ± 1.56	9.56 ± 2.79	59.57 ± 4.18	86%
F1 Day 3	68.06 ± 5.39	13.54 ± 1.04	54.52 ± 3.43	80%
F1 Day 7	60.47 ± 5.69	15.26 ± 3.51	45.21 ± 12.17	75%
F1 Day 14	124.62 ± 13.26	21.67 ± 10.3	102.95 ± 17.88	83%
F1 Day 21	133.19 ± 6.86	68.86 ± 11.17	64.33 ± 12.03	48%
F2 Day 0	68.5 ± 13.31	21.03 ± 1.02	47.48 ± 12.03	69%
F2 Day 1	61.18 ± 2.38	15.25 ± 4.98	45.93 ± 5.67	75%
F2 Day 3	70.26 ± 13.47	18.42 ± 1.04	51.84 ± 9.95	74%
F2 Day 7	131.36 ± 5.63	22.88 ± 1.26	108.49 ± 11.08	83%
F2 Day 14	137.49 ± 1.4	40.96 ± 4.9	96.52 ± 21.49	70%
F2 Day 21	184.44 ± 21.03	32.62 ± 3.95	151.82 ± 21.49	82%

*Data previously published (Teixeira et al., 2022)

Table S5. Concentration of total, free, and esterified 13-HODE in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

13-HODE				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L)	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	202.17 ± 6.94	44.39 ± 12.4	157.78 ± 19.33	78%
F1 Day 1	235.4 ± 2.18	39.53 ± 5.21	195.87 ± 15.56	83%
F1 Day 3	325.8 ± 24.73	53.6 ± 10.19	272.21 ± 12.16	84%
F1 Day 7	274.37 ± 19.85	58.07 ± 8.22	216.31 ± 17.13	79%
F1 Day 14	326.85 ± 20.85	74.54 ± 4.18	252.31 ± 2.23	77%
F1 Day 21	392.81 ± 54.14	173.69 ± 48.02	219.12 ± 59.15	56%
F2 Day 0	371.77 ± 58.75	65.24 ± 4.37	306.53 ± 59.15	82%
F2 Day 1	317.63 ± 16.23	51.28 ± 15.45	266.34 ± 30.65	84%
F2 Day 3	353.38 ± 61.25	62.8 ± 15.1	290.57 ± 47.83	82%
F2 Day 7	549.8 ± 24.55	75.11 ± 20.92	474.69 ± 40.93	86%
F2 Day 14	503.03 ± 16.2	114.1 ± 58.96	388.93 ± 54.83	77%
F2 Day 21	556.71 ± 64.51	73.46 ± 20.4	483.25 ± 78.73	87%

*Data previously published (Teixeira et al., 2022)

Table S6. Concentration of total, free, and esterified 9-oxo-ODE in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

9-oxo-ODE				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	19.75 ± 0.41	12.33 ± 2.04	7.42 ± 1.81	38%
F1 Day 1	21.97 ± 1.05	9.01 ± 1.72	12.96 ± 5.09	59%
F1 Day 3	22.16 ± 1.91	12.38 ± 4.82	9.78 ± 1.94	44%
F1 Day 7	22.45 ± 1.12	10.59 ± 0.82	11.87 ± 3.3	53%
F1 Day 14	18.68 ± 0.41	12.74 ± 3.09	5.94 ± 1.37	32%
F1 Day 21	19.96 ± 0.74	14.91 ± 1.48	5.05 ± 0.55	25%
F2 Day 0	25.56 ± 1.27	12.03 ± 1.82	13.54 ± 0.55	53%
F2 Day 1	21.53 ± 3.86	8.46 ± 2.53	13.07 ± 3.28	61%
F2 Day 3	25.68 ± 4.49	11.39 ± 2.5	14.29 ± 4.93	56%
F2 Day 7	32.33 ± 4.01	13.74 ± 3.96	18.58 ± 7.25	57%
F2 Day 14	18.97 ± 2.61	10.98 ± 1.34	7.98 ± 2.79	42%
F2 Day 21	25.24 ± 3.09	7.35 ± 0.35	17.89 ± 3.13	71%

*Data previously published (Teixeira et al., 2022)

Table S7. Concentration of total, free, and esterified 13-oxo-ODE in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

13-oxo-ODE				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	11.87 ± 0.33	9.72 ± 1.71	2.14 ± 2	18%
F1 Day 1	15.55 ± 1.68	6.95 ± 1.73	8.59 ± 3.52	55%
F1 Day 3	18.22 ± 3.41	10.27 ± 2.22	7.95 ± 0.98	44%
F1 Day 7	15.24 ± 1.22	10.43 ± 1.57	4.8 ± 0.42	32%
F1 Day 14	13.53 ± 2.36	11.27 ± 1.99	2.27 ± 0.95	17%
F1 Day 21	12.6 ± 1.55	12.11 ± 0.7	0.5 ± 3.64	4%
F2 Day 0	20.94 ± 3.53	11.1 ± 1.84	9.83 ± 3.64	47%
F2 Day 1	18.56 ± 1.58	11.17 ± 1.73	7.38 ± 3.04	40%
F2 Day 3	20.08 ± 2.12	13.09 ± 2.76	6.98 ± 4.84	35%
F2 Day 7	30.83 ± 2.65	12.05 ± 3.04	18.78 ± 0.97	61%
F2 Day 14	15.98 ± 2.16	11.45 ± 7.26	4.53 ± 5.66	28%
F2 Day 21	20.39 ± 2.32	9.65 ± 3.03	10.74 ± 1.38	53%

*Data previously published (Teixeira et al., 2022)

Table S8. Concentration of total, free, and esterified 9,10-EpOME in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

9,10-EpOME				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	24.05 ± 3.78	6.87 ± 1.43	17.18 ± 4.93	71%
F1 Day 1	26.07 ± 2.08	3.57 ± 0.48	22.51 ± 5.92	86%
F1 Day 3	26.34 ± 2.83	7.73 ± 3.92	18.61 ± 2.3	71%
F1 Day 7	30.57 ± 1.73	5.04 ± 0.6	25.52 ± 3.99	83%
F1 Day 14	34.9 ± 3.97	5.75 ± 0.05	29.15 ± 4.68	84%
F1 Day 21	36.17 ± 2.02	15.53 ± 4.46	20.64 ± 4.34	57%
F2 Day 0	41.24 ± 5.27	7.16 ± 1.1	34.09 ± 4.34	83%
F2 Day 1	40.77 ± 1.02	6.04 ± 0.85	34.73 ± 1.82	85%
F2 Day 3	43.8 ± 3.9	7.07 ± 1.1	36.73 ± 4.29	84%
F2 Day 7	51.16 ± 8.72	10.49 ± 0.63	40.67 ± 9.35	79%
F2 Day 14	59.57 ± 4.8	7.34 ± 1.16	52.23 ± 5.67	88%
F2 Day 21	73.44 ± 9.28	8.65 ± 1.3	64.79 ± 10.04	88%

*Data previously published (Teixeira et al., 2022)

Table S9. Concentration of total, free, and esterified 12(13)-EpOME in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

12(13)-EpOME				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	346.26 ± 48.27	18.05 ± 5.92	328.21 ± 47.57	95%
F1 Day 1	359.8 ± 41.43	17.75 ± 4.97	342.06 ± 26.57	95%
F1 Day 3	378.64 ± 20.51	26.44 ± 15.04	352.2 ± 36.32	93%
F1 Day 7	428.97 ± 35.53	24.76 ± 8.97	404.22 ± 35.16	94%
F1 Day 14	446.91 ± 32.51	65.49 ± 18.09	381.43 ± 21.88	85%
F1 Day 21	506.42 ± 29.47	59.23 ± 15.96	447.19 ± 136.28	88%
F2 Day 0	380.58 ± 137.19	22.39 ± 3.24	358.19 ± 136.28	94%
F2 Day 1	558.19 ± 110.4	20.76 ± 1.1	537.42 ± 111.42	96%
F2 Day 3	681.63 ± 169.99	24.25 ± 4.58	657.38 ± 165.47	96%
F2 Day 7	651.48 ± 84.18	30.59 ± 1.55	620.88 ± 84.88	95%
F2 Day 14	765.09 ± 66.05	41.03 ± 3.03	724.06 ± 63.19	95%
F2 Day 21	1055.06 ± 203.74	30.21 ± 4.84	1024.85 ± 203.83	97%

*Data previously published (Teixeira et al., 2022)

Table S10. Concentration of total, free, and esterified 9,10-DiHOME in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

9,10-DiHOME				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	19.59 ± 1.24	10.74 ± 3.24	8.85 ± 4.37	45%
F1 Day 1	21.53 ± 1.26	15.29 ± 2.04	6.24 ± 1.59	29%
F1 Day 3	24.45 ± 1.45	15.99 ± 1.6	8.46 ± 2.67	35%
F1 Day 7	19.44 ± 2.61	16.45 ± 2.06	2.99 ± 2.08	15%
F1 Day 14	17.47 ± 2.22	15.63 ± 1.15	1.84 ± 2.29	11%
F1 Day 21	13.68 ± 1.18	9.93 ± 3.09	3.75 ± 2.55	27%
F2 Day 0	29.05 ± 4.07	17.26 ± 2.87	11.79 ± 1.37	41%
F2 Day 1	25.53 ± 2.16	25.14 ± 3.27	0.39 ± 0	2%
F2 Day 3	25.32 ± 3.95	18.08 ± 2.98	7.24 ± 2.66	29%
F2 Day 7	25.92 ± 1.57	20.03 ± 5.18	5.89 ± 5.32	23%
F2 Day 14	20.27 ± 2.12	13.61 ± 6.47	6.66 ± 4.59	33%
F2 Day 21	20.56 ± 3.17	11.67 ± 1.65	8.9 ± 4.08	43%

*Data previously published (Teixeira et al., 2022)

Table S11. Concentration of total, free, and esterified 12,13-DiHOME in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

12,13-DiHOME				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	30.58 ± 1.74	12.6 ± 0.6	17.98 ± 1.83	59%
F1 Day 1	35.47 ± 3.17	11.96 ± 2.99	23.52 ± 3.05	66%
F1 Day 3	33.05 ± 1.31	13.94 ± 3.99	19.11 ± 1.55	58%
F1 Day 7	35.89 ± 0.78	12.59 ± 0.77	23.3 ± 3.7	65%
F1 Day 14	35.12 ± 2.47	20.08 ± 6.16	15.04 ± 5.74	43%
F1 Day 21	44.12 ± 3.06	19.22 ± 3.13	24.9 ± 7.64	56%
F2 Day 0	34.63 ± 3.41	16.89 ± 4.25	17.74 ± 7.64	51%
F2 Day 1	37.67 ± 3.76	13.13 ± 4.57	24.54 ± 8.08	65%
F2 Day 3	37.27 ± 2.58	12.16 ± 2.41	25.11 ± 1.26	67%
F2 Day 7	41.92 ± 3.34	13.79 ± 3.66	28.13 ± 5.78	67%
F2 Day 14	45.71 ± 2.52	18.62 ± 7.54	27.09 ± 10.05	59%
F2 Day 21	50.2 ± 2.93	12.17 ± 3.29	38.02 ± 4.41	76%

*Data previously published (Teixeira et al., 2022)

Table S12. Concentration of total, free, and esterified 9,10,13-TriHOME in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

9,10,13-TriHOME				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	423.35 ± 9.16	126.67 ± 15.82	296.67 ± 8.13	70%
F1 Day 1	440.87 ± 26.04	114.4 ± 2.03	326.47 ± 24.49	74%
F1 Day 3	433.65 ± 16.36	111.22 ± 17.33	322.43 ± 4.89	74%
F1 Day 7	467.39 ± 9.79	122.16 ± 4.18	345.22 ± 13.93	74%
F1 Day 14	525.04 ± 12.23	109.78 ± 15.49	415.26 ± 13.69	79%
F1 Day 21	552.65 ± 13.39	129.98 ± 3.34	422.67 ± 13.13	76%
F2 Day 0	517.61 ± 6.35	142.29 ± 17.52	375.33 ± 182.52	73%
F2 Day 1	495.12 ± 19.13	102.24 ± 30.39	392.88 ± 30.14	79%
F2 Day 3	448.76 ± 75.03	120.64 ± 20.94	328.12 ± 58.32	73%
F2 Day 7	524.12 ± 51.13	154.02 ± 0.23	370.1 ± 174.54	71%
F2 Day 14	539.17 ± 25.57	113.52 ± 28.32	425.65 ± 26.35	79%
F2 Day 21	536.97 ± 59.47	126.96 ± 16.48	410.01 ± 45.6	76%

*Data previously published (Teixeira et al., 2022)

Table S13. Concentration of total, free, and esterified 9,12,13-TriHOME in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

9,12,13-TriHOME				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	514.16 ± 17.52	128.37 ± 36.59	385.79 ± 12.77	75%
F1 Day 1	474.49 ± 33.18	118.15 ± 42.8	356.34 ± 21.86	75%
F1 Day 3	482.09 ± 23.68	117.71 ± 51.48	364.38 ± 9.72	76%
F1 Day 7	604.38 ± 43.09	133.33 ± 49.28	471.05 ± 43.07	78%
F1 Day 14	572.55 ± 53.31	120.85 ± 54.47	451.7 ± 41.27	79%
F1 Day 21	556.64 ± 12.57	145.98 ± 51.25	410.66 ± 15.52	74%
F2 Day 0	563.99 ± 28.61	154.72 ± 43.58	409.27 ± 19.22	73%
F2 Day 1	508.62 ± 16.97	135.61 ± 58.41	373.01 ± 14.05	73%
F2 Day 3	536.59 ± 38.69	131.92 ± 63.54	404.67 ± 20.28	75%
F2 Day 7	610.3 ± 24.43	166.66 ± 64.06	443.63 ± 1.14	73%
F2 Day 14	600.37 ± 16.19	154.56 ± 58.96	445.81 ± 18.75	74%
F2 Day 21	661.38 ± 38.44	141.18 ± 64.69	520.2 ± 46.71	79%

*Data previously published (Teixeira et al., 2022)

Table S14. Concentration of total, free, and esterified 9-HOTrE in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

9-HOTrE				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	4.78 ± 0.46	1.29 ± 0.28	3.49 ± 0.63	73%
F1 Day 1	5.89 ± 0.45	1.06 ± 0.21	4.83 ± 0.28	82%
F1 Day 3	8.35 ± 0.23	1.24 ± 0.2	7.11 ± 0.42	85%
F1 Day 7	9.99 ± 0.88	1.67 ± 0.11	8.33 ± 0.78	83%
F1 Day 14	15.93 ± 0.65	3.52 ± 0.33	12.4 ± 0.81	78%
F1 Day 21	19.51 ± 1.71	7.94 ± 2.83	11.58 ± 0.29	59%
F2 Day 0	9.03 ± 1.68	2.08 ± 0.48	6.96 ± 1.35	77%
F2 Day 1	8.26 ± 0.26	1.74 ± 0.27	6.53 ± 0.48	79%
F2 Day 3	8.35 ± 0.59	1.96 ± 0.28	6.39 ± 0.32	76%
F2 Day 7	18.25 ± 1.21	2.44 ± 0.49	15.81 ± 2.36	87%
F2 Day 14	17.63 ± 0.94	3.6 ± 1.4	14.03 ± 1.52	80%
F2 Day 21	23.04 ± 3.78	3.22 ± 0.48	19.81 ± 3.53	86%

*Data previously published (Teixeira et al., 2022)

Table S15. Concentration of total, free, and esterified 13-HOTrE in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

13-HOTrE				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	5.49 ± 0.47	2.22 ± 0.64	3.27 ± 1.18	60%
F1 Day 1	8.12 ± 0.4	2.83 ± 0.46	5.29 ± 1.67	65%
F1 Day 3	10.37 ± 0.42	3.68 ± 0.51	6.7 ± 1.9	65%
F1 Day 7	10.08 ± 1.42	4.23 ± 0.58	5.85 ± 1.77	58%
F1 Day 14	15.79 ± 1.11	6.01 ± 1.09	9.78 ± 2.28	62%
F1 Day 21	15.94 ± 0.9	7.07 ± 2.38	8.88 ± 2.18	56%
F2 Day 0	11.83 ± 1.69	5.11 ± 0.5	6.72 ± 1.91	57%
F2 Day 1	10.52 ± 1.35	4.07 ± 0.81	6.45 ± 1.86	61%
F2 Day 3	11.04 ± 1.48	4.29 ± 1.29	6.76 ± 1.91	61%
F2 Day 7	20.54 ± 0.73	5.45 ± 1.25	15.09 ± 2.71	73%
F2 Day 14	18.4 ± 0.2	4.98 ± 2.38	13.42 ± 2.6	73%
F2 Day 21	22.3 ± 3.33	3.69 ± 0.3	18.61 ± 2.92	83%

*Data previously published (Teixeira et al., 2022)

Table S16. Concentration of total, free, and esterified 10(11)-EpDPE in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

10(11)-EpDPE				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	ND	ND	ND	100%
F1 Day 1	ND	ND	ND	100%
F1 Day 3	ND	ND	ND	100%
F1 Day 7	ND	ND	ND	100%
F1 Day 14	ND	ND	ND	100%
F1 Day 21	ND	ND	ND	100%
F2 Day 0	10.84 ± 2.52	ND	10.84 ± 2.38	100%
F2 Day 1	10.12 ± 2.76	ND	10.12 ± 2.31	100%
F2 Day 3	8.78 ± 2.45	ND	8.78 ± 2.17	100%
F2 Day 7	3.23 ± 1.52	ND	7 ± 1.95	100%
F2 Day 14	4.73 ± 1.93	0.12 ± 0.02	6.8 ± 1.92	98%
F2 Day 21	7.32 ± 3.78	0.14 ± 0.03	7.17 ± 1.97	98%

*Data previously published (Teixeira et al., 2022)

Table S17. Concentration of total, free, and esterified 13(14)-EpDPE in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

13(14)-EpDPE				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	ND	ND	ND	100%
F1 Day 1	ND	ND	ND	100%
F1 Day 3	ND	ND	ND	100%
F1 Day 7	ND	ND	ND	100%
F1 Day 14	ND	ND	ND	100%
F1 Day 21	ND	ND	ND	100%
F2 Day 0	30.64 ± 7.14	ND	30.64 ± 7.14	100%
F2 Day 1	31.09 ± 9.82	ND	31.09 ± 9.82	100%
F2 Day 3	25.22 ± 10.42	ND	25.22 ± 10.42	100%
F2 Day 7	7.34 ± 2.99	ND	7.34 ± 2.99	100%
F2 Day 14	14.15 ± 8.16	ND	14.15 ± 8.16	100%
F2 Day 21	18.86 ± 11.34	0.06 ± 0.01	18.8 ± 11.33	100%

*Data previously published (Teixeira et al., 2022)

Table S18. Concentration of total, free, and esterified 16(17)-EpDPE in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

16(17)-EpDPE				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	ND	ND	ND	100%
F1 Day 1	ND	ND	ND	100%
F1 Day 3	ND	ND	ND	100%
F1 Day 7	ND	ND	ND	100%
F1 Day 14	ND	ND	ND	100%
F1 Day 21	ND	ND	ND	100%
F2 Day 0	25.91 ± 4.24	ND	25.91 ± 4.24	100%
F2 Day 3	37.25 ± 7	ND	37.25 ± 7	100%
F2 Day 3	33.55 ± 3	ND	33.55 ± 3	100%
F2 Day 7	29.67 ± 2.87	ND	29.67 ± 2.87	100%
F2 Day 14	29.72 ± 2.66	0.14 ± 0.03	29.58 ± 2.67	99%
F2 Day 21	38.12 ± 5.27	0.08 ± 0.01	38.05 ± 5.27	100%

*Data previously published (Teixeira et al., 2022)

Table S19. Concentration of total, free, and esterified 19(20)-EpDPE in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

19(20)-EpDPE				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	ND	ND	ND	100%
F1 Day 1	ND	ND	ND	100%
F1 Day 3	ND	ND	ND	100%
F1 Day 7	ND	ND	ND	100%
F1 Day 14	ND	ND	ND	100%
F1 Day 21	ND	ND	ND	100%
F2 Day 0	84.98 ± 16.65	ND	84.98 ± 16.65	100%
F2 Day 3	88.27 ± 30.86	ND	88.27 ± 30.86	100%
F2 Day 3	79.51 ± 23.51	ND	79.51 ± 23.51	100%
F2 Day 7	34.33 ± 11.27	ND	34.33 ± 11.27	100%
F2 Day 14	48.39 ± 27.35	0.33 ± 0.07	48.06 ± 27.3	99%
F2 Day 21	70.05 ± 36.00	0.27 ± 0.03	69.78 ± 36.03	100%

*Data previously published (Teixeira et al., 2022)

Table S20. Concentration of total, free, and esterified 17-HDoHE in Formula 1- (no DHA) -F1 and Formula 2 (with DHA) - F2 from day 0 to 21.

17-HDoHE				
Compound	Total Oxylipins (nmol/L)	Free Oxylipins (nmol/L) *	Esterified Oxylipins (nmol/L)	Esterified Oxylipins
F1 Day 0	ND	ND	ND	100%
F1 Day 1	0.11 ± 0.21	ND	0.11 ± 0.3	100%
F1 Day 3	0.06 ± 0.3	ND	0.06 ± 0.07	100%
F1 Day 7	0.02 ± 0.07	ND	0.02 ± 0.39	100%
F1 Day 14	0.05 ± 0.39	ND	0.05 ± 0.26	100%
F1 Day 21	0.1 ± 0.26	ND	0.1 ± 3.56	100%
F2 Day 0	20.8 ± 3.56	ND	20.8 ± 3.56	100%
F2 Day 3	15.3 ± 2.18	ND	15.3 ± 2.18	100%
F2 Day 3	18.47 ± 2.64	ND	18.47 ± 2.64	100%
F2 Day 7	20.06 ± 2.9	ND	20.06 ± 2.9	100%
F2 Day 14	30.87 ± 0.32	1.39 ± 0.61	29.49 ± 0.57	96%
F2 Day 21	55.59 ± 8.12	2.15 ± 1.05	53.44 ± 8.74	96%

*Data previously published (Teixeira et al., 2022)

Abbreviations: EpETre (epoxyeicosatrienoic acid), HETE (hydroxyeicosatetraenoic acid), EpDPE (epoxydocosapentanoic acid), HDoHE (hydroxydocosahexaenoic acid), EpOME (epoxyoctadecenoic acid); DiHOME (dihydroxyoctadecenoic acid), TriHOME (trihydroxyoctadecenoic acid), HODE (hydroxyoctadecadienoic acid), oxo-ODE (oxo-octadecadienoic acid), HOTrE (hydroxyoctadecatrienoic acid) DiHETrE (dihydroxyeicosatrienoic acid), HEPE (hydroxyeicosapentaenoic acid) and TXB2 (thromboxane B2).

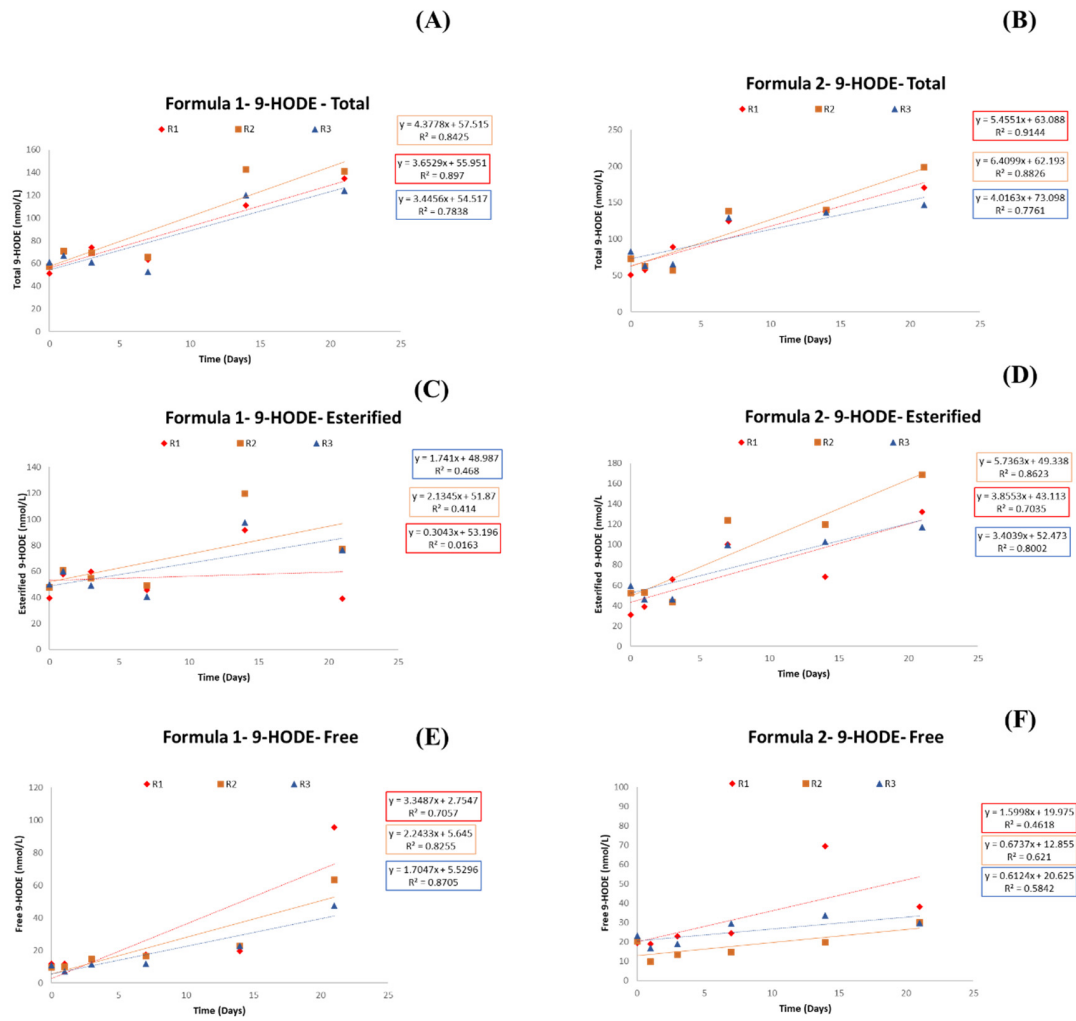


Figure S1. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 9-HODE formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

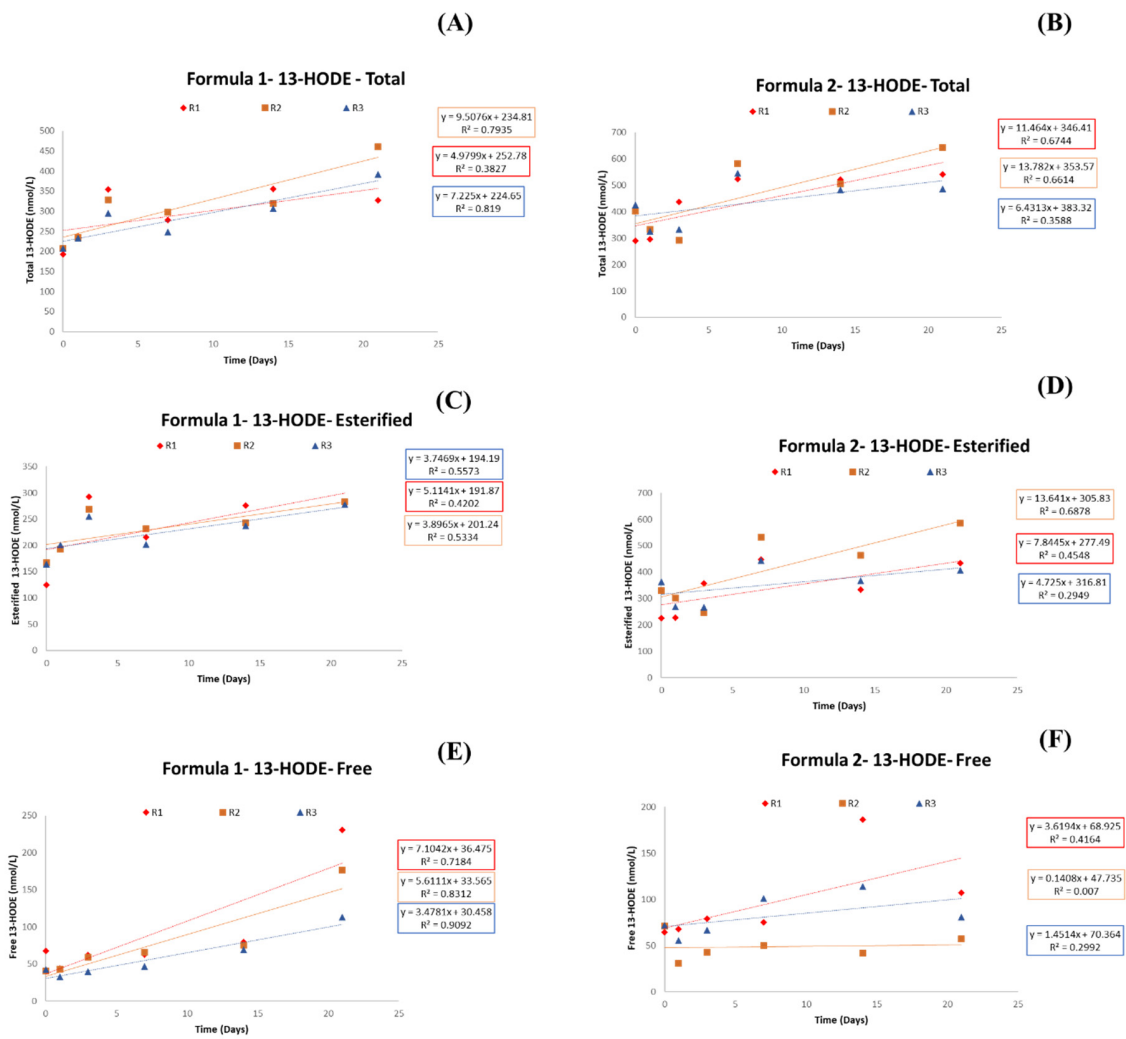


Figure S2. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 13-HODE formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

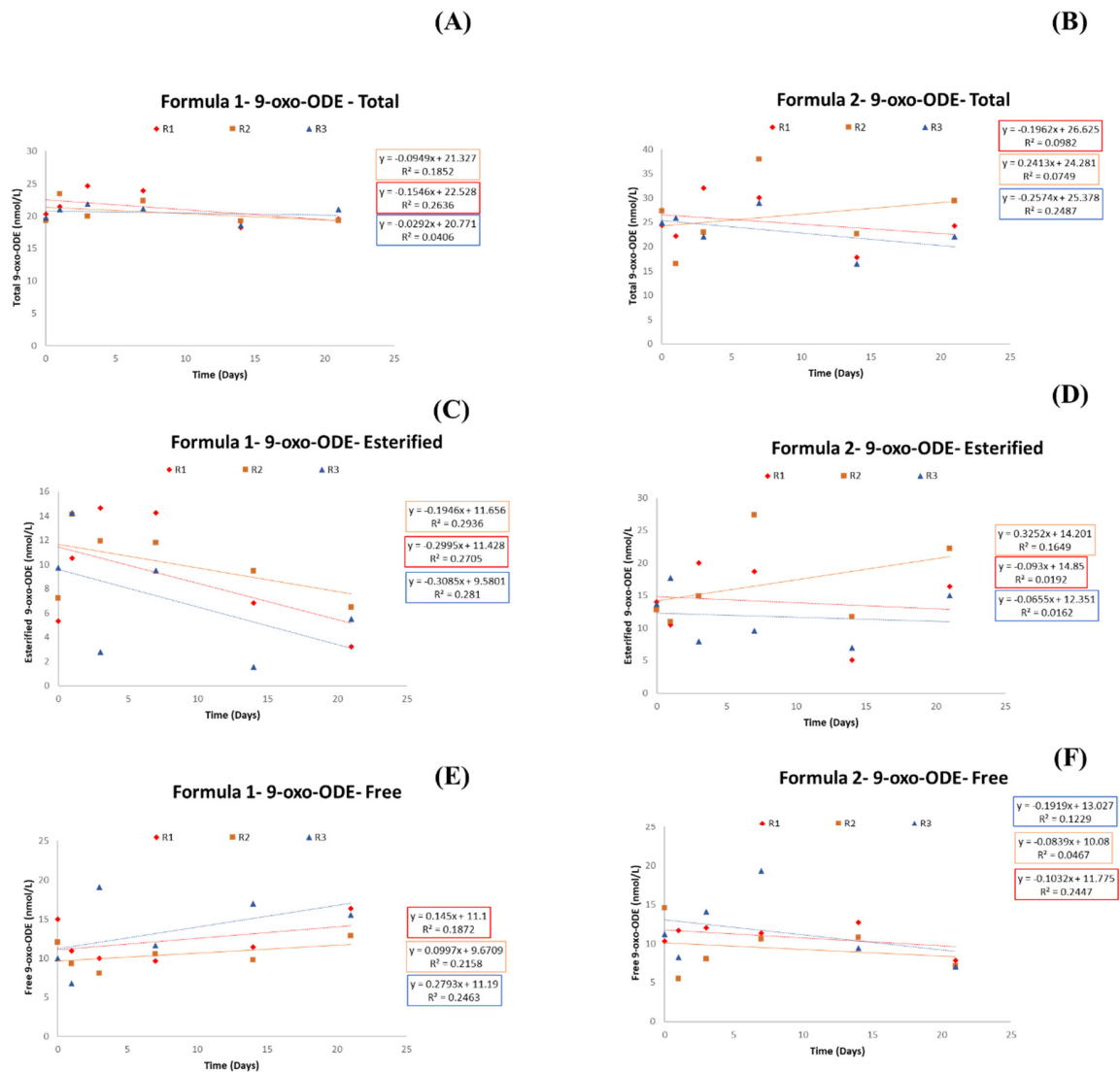


Figure S3. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 9-oxo-ODE formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

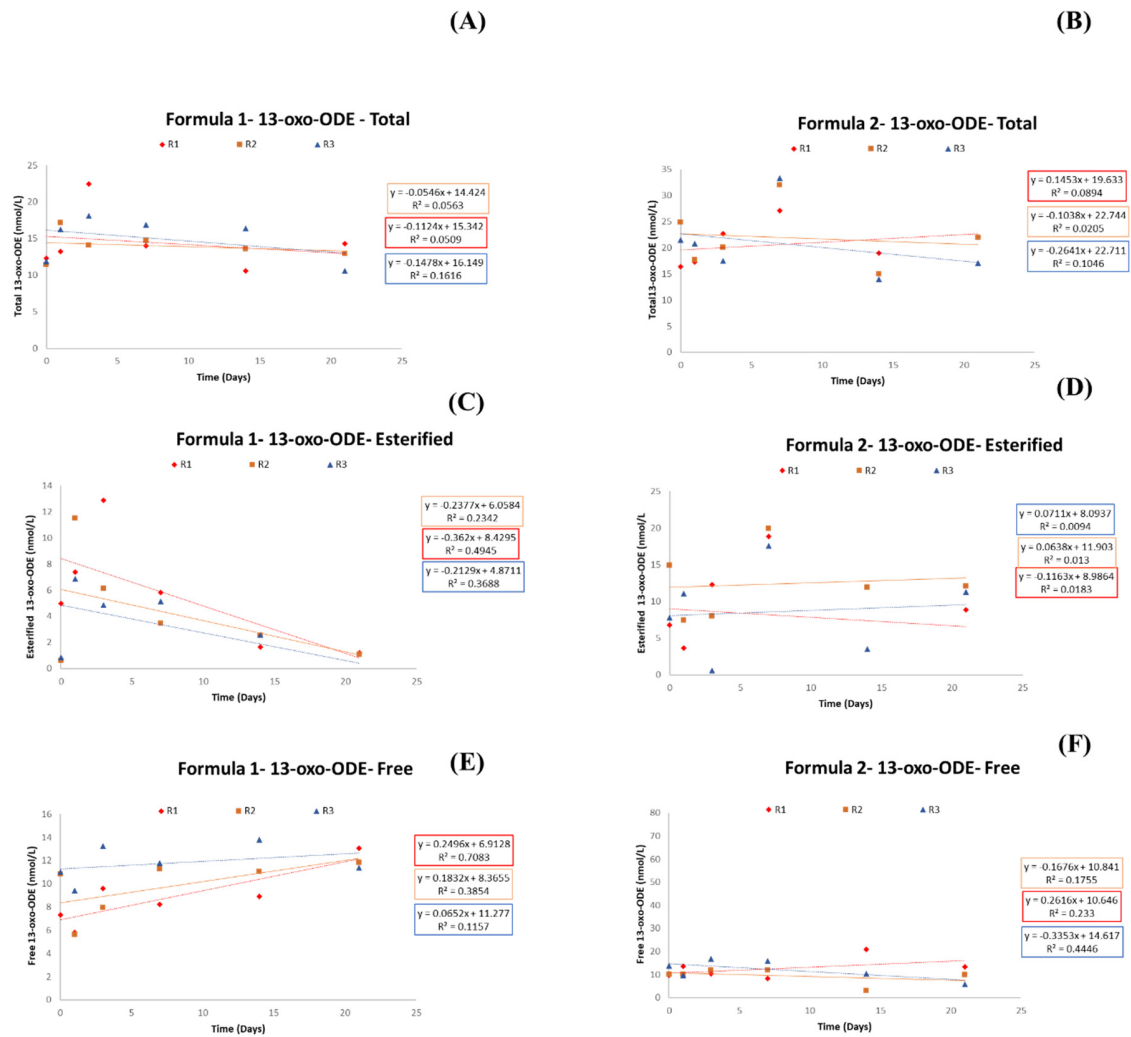


Figure S4. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 13-oxo-ODE formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

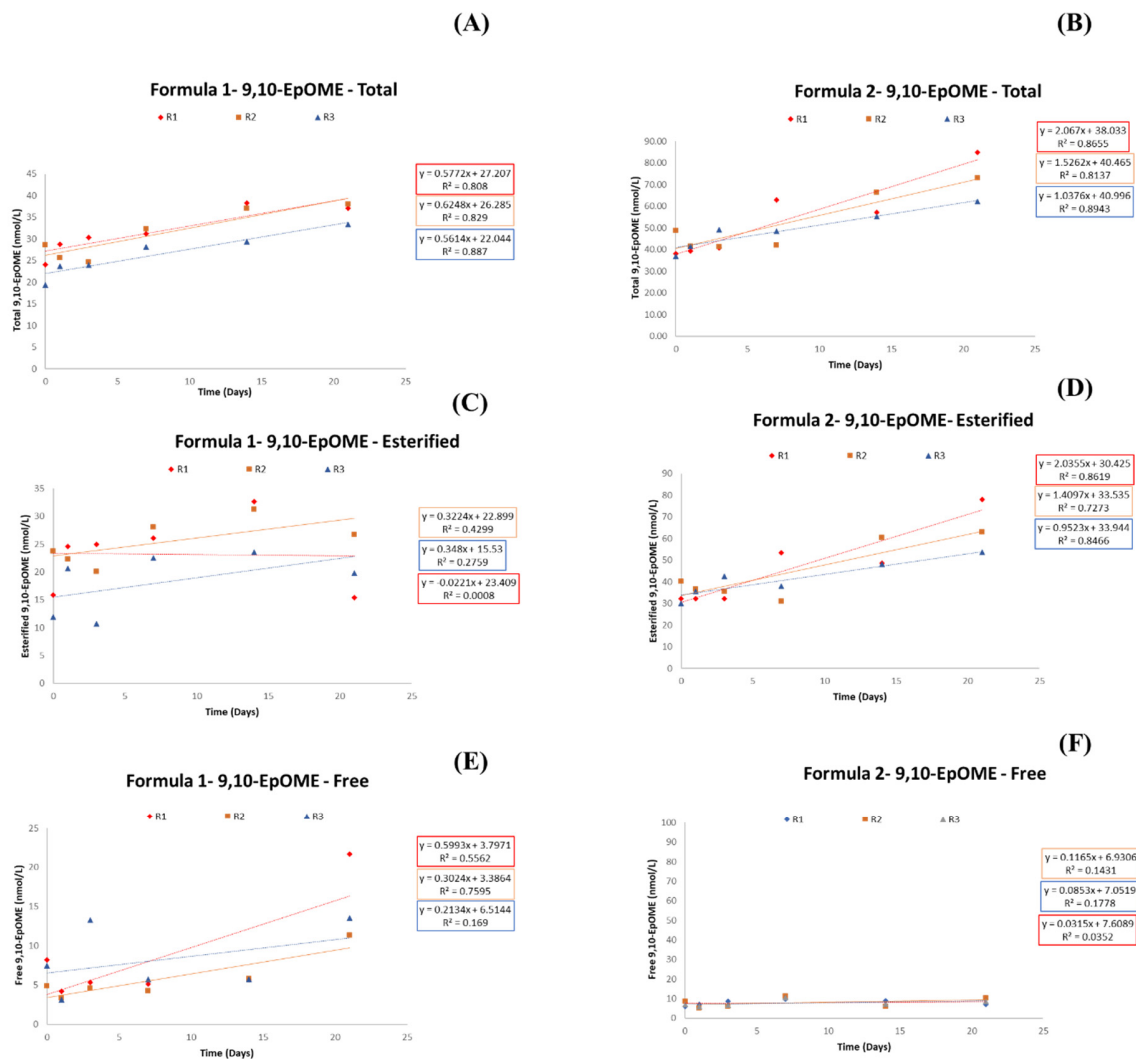


Figure S5. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 9(10)-EpOME formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

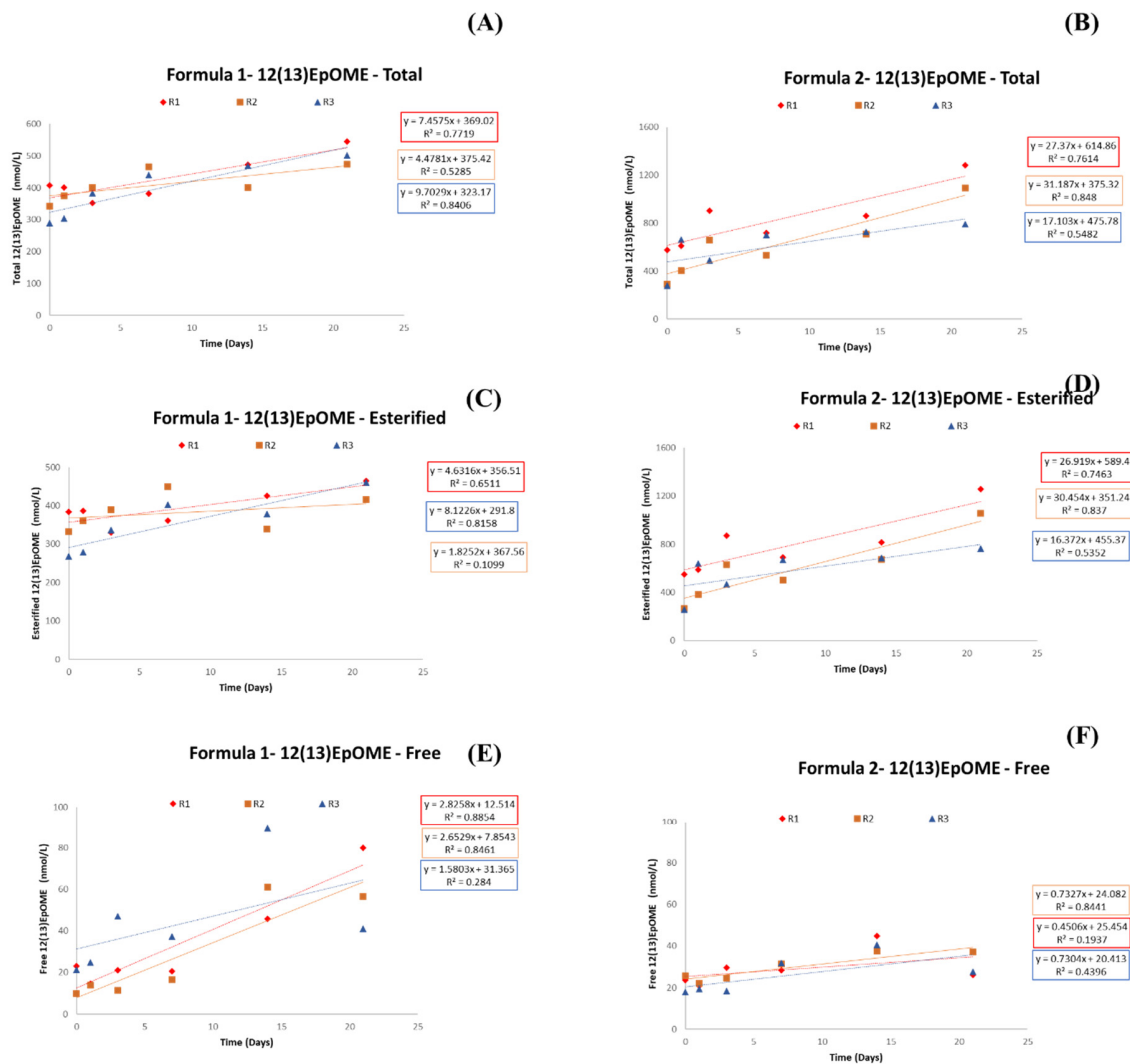


Figure S6. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 12(13)-EpOME formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

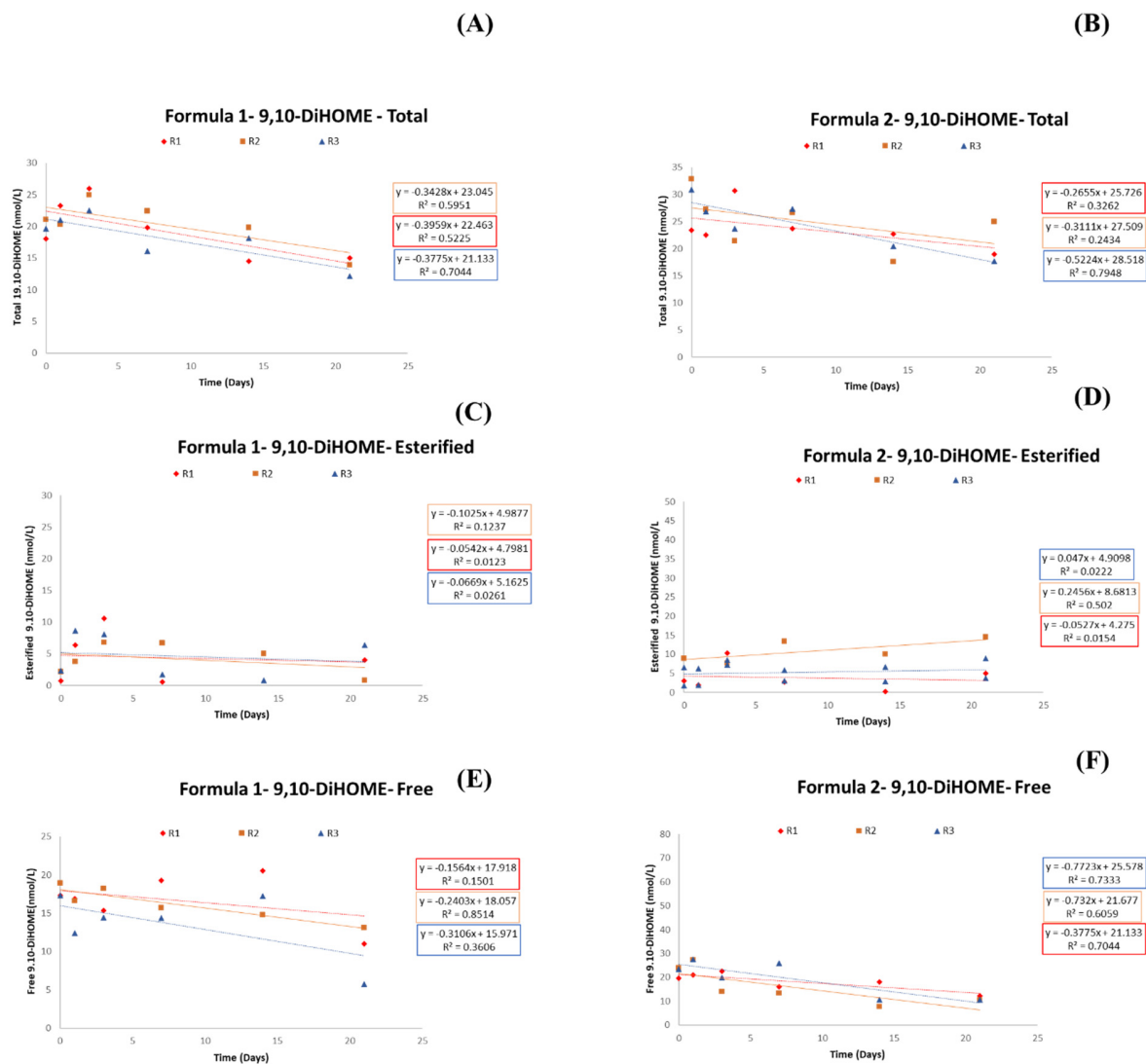


Figure S7. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 9,10-DiHOME formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

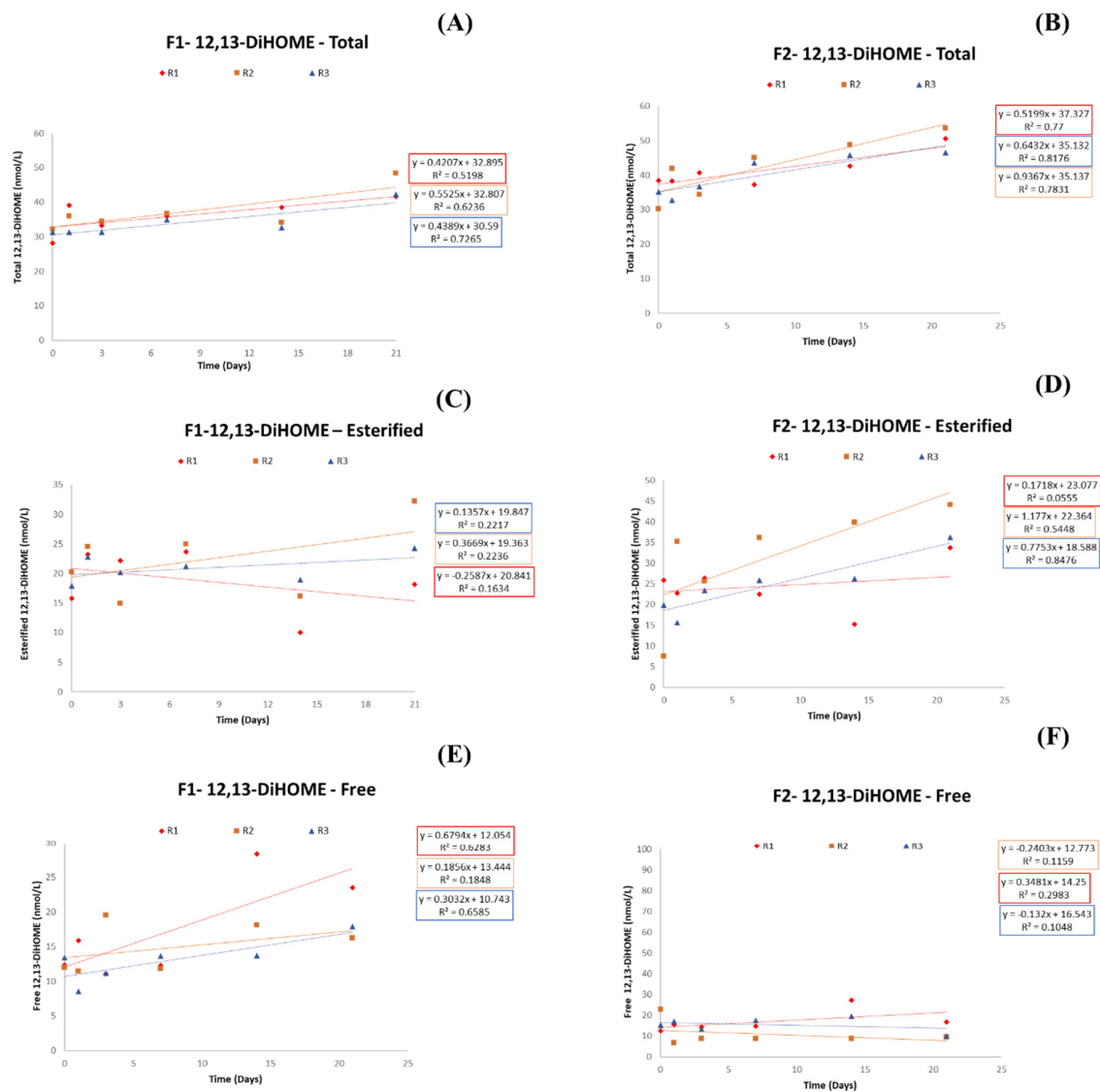


Figure S8. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 12,13-DiHOME formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

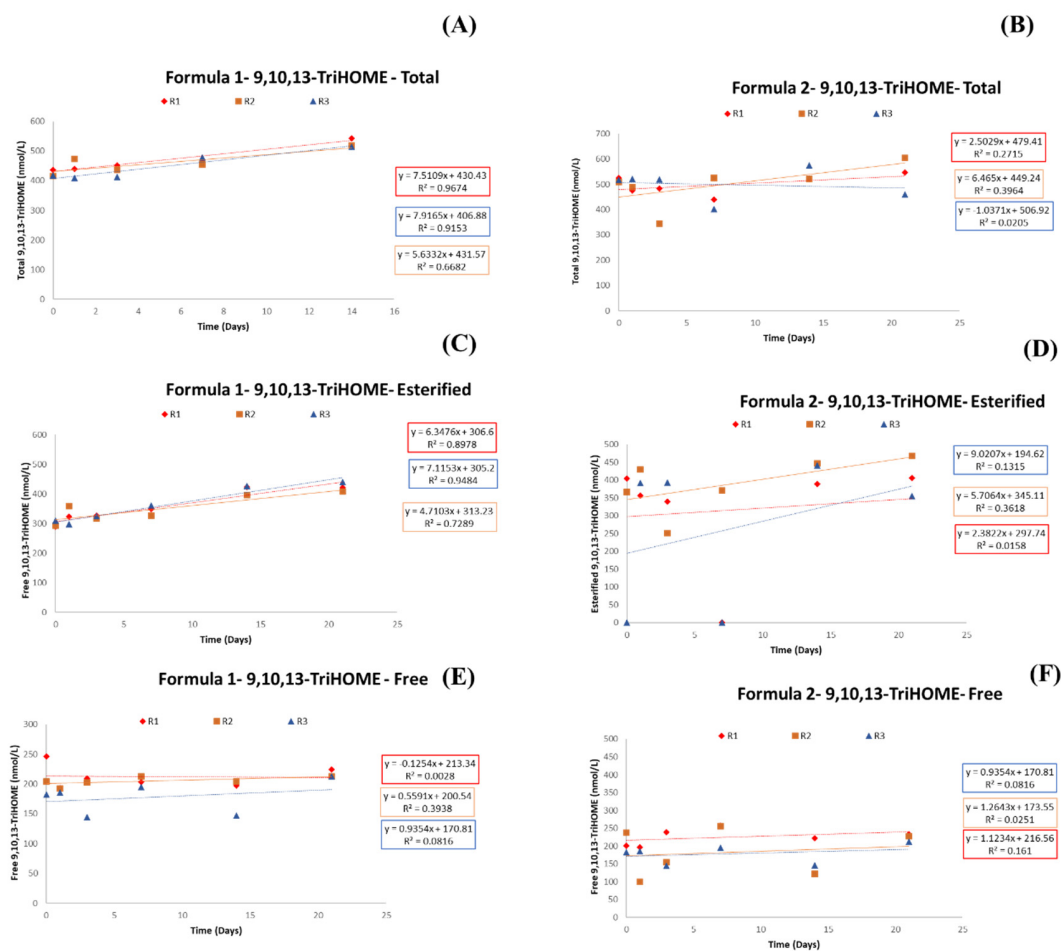


Figure S9. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 9,10,13-TriHOME formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

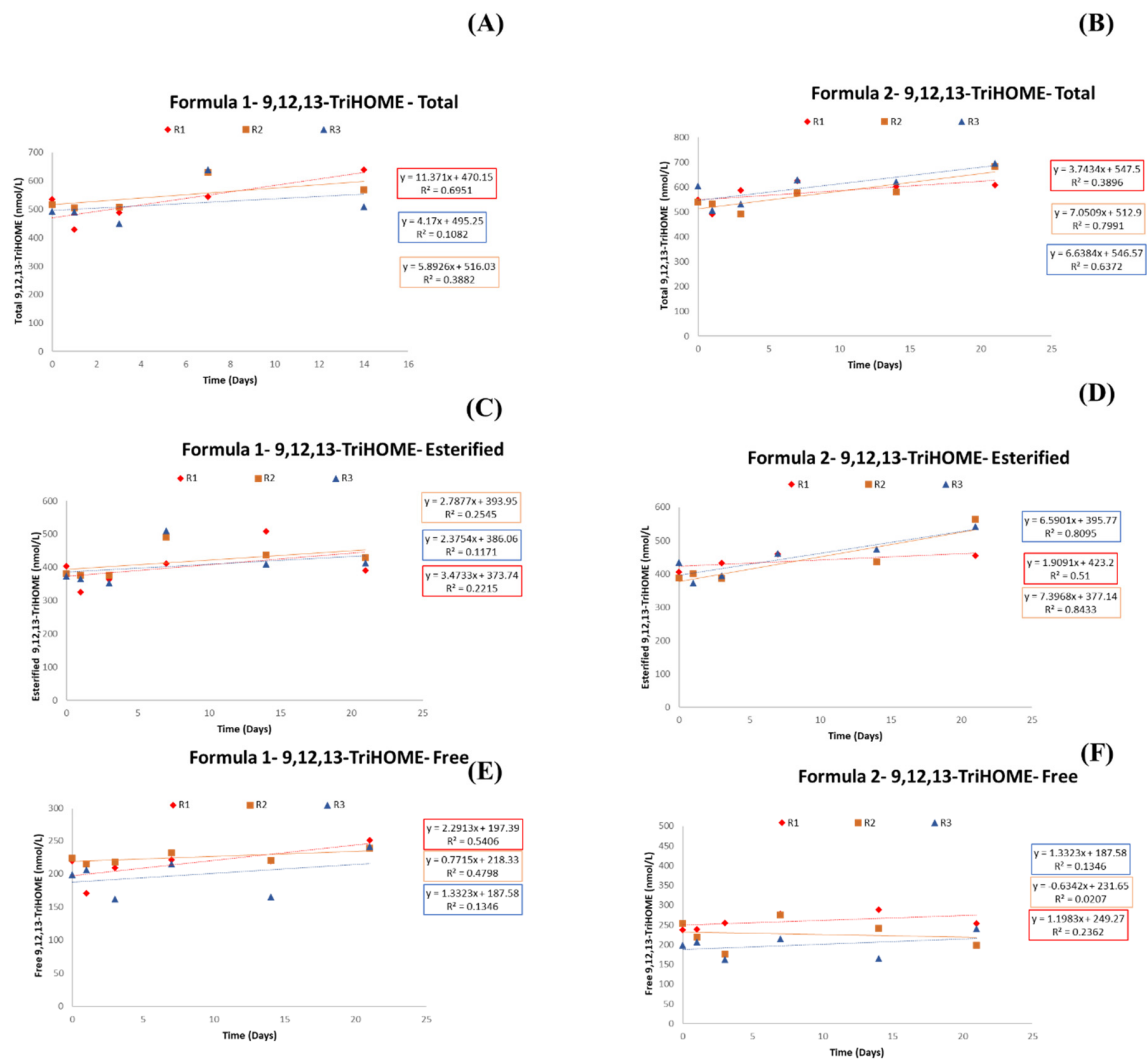


Figure S10. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 9,12,13-TriHOME formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

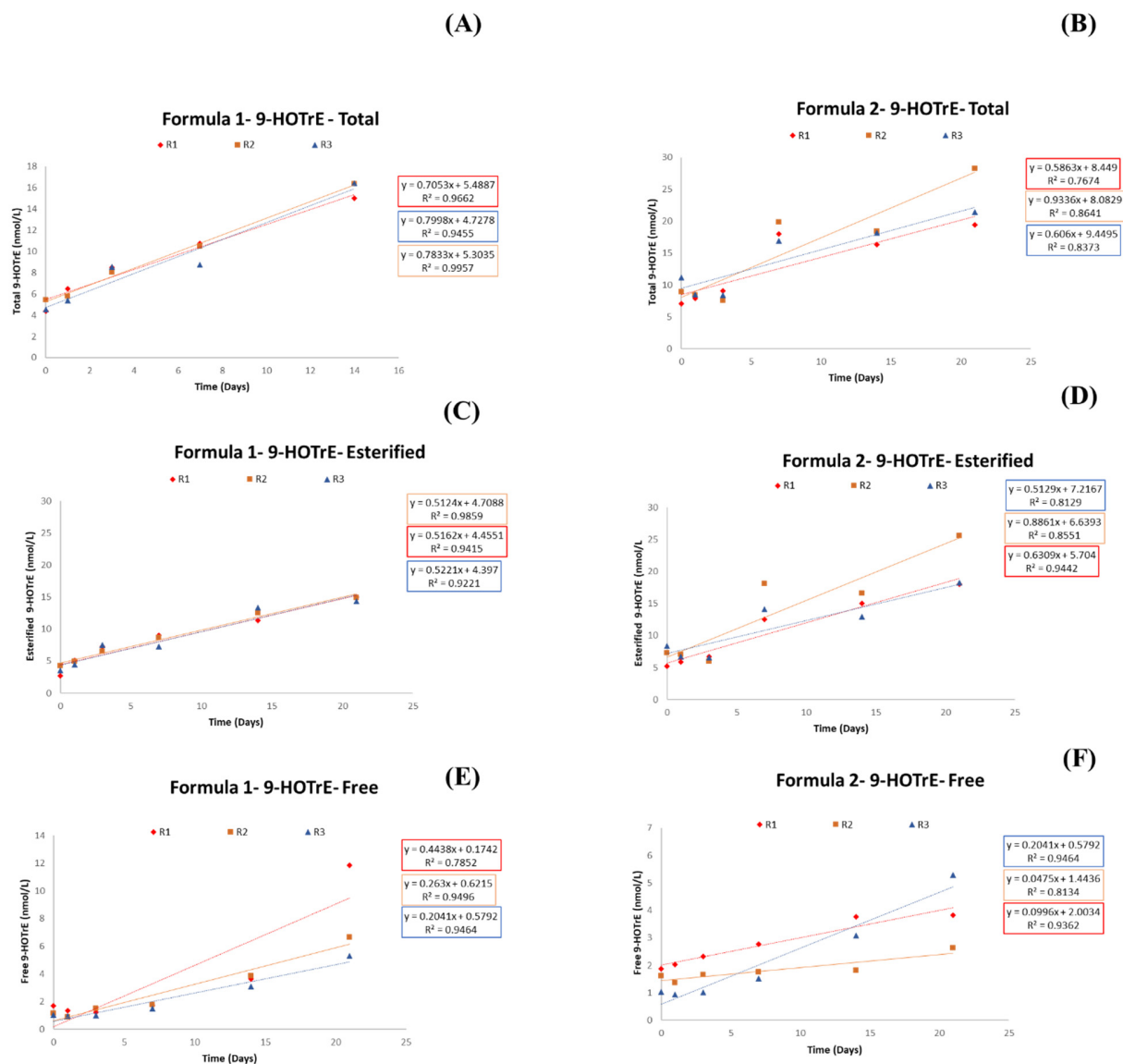


Figure S11. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 9-HOTrE formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

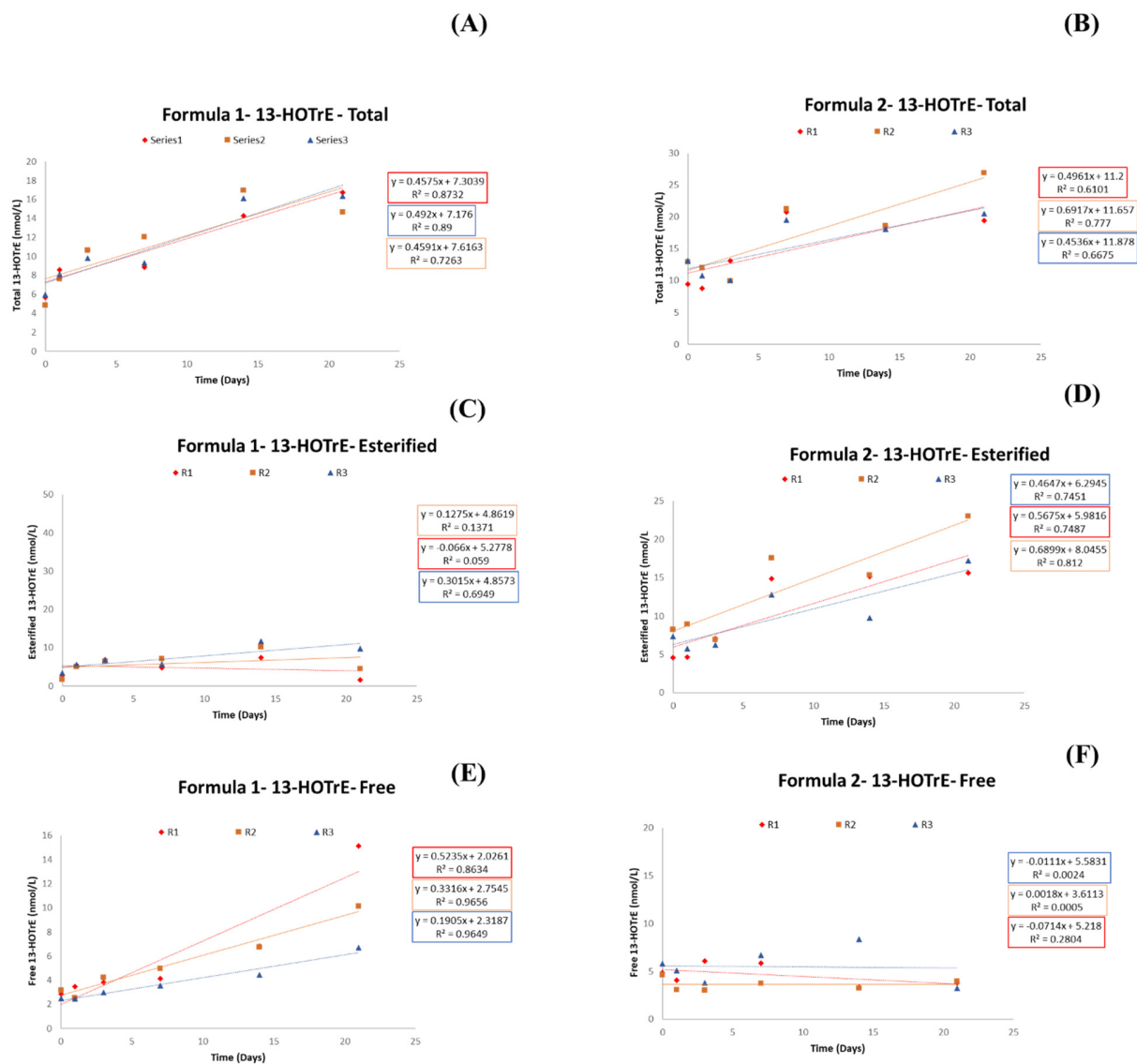


Figure S12. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 13-HOTrE formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

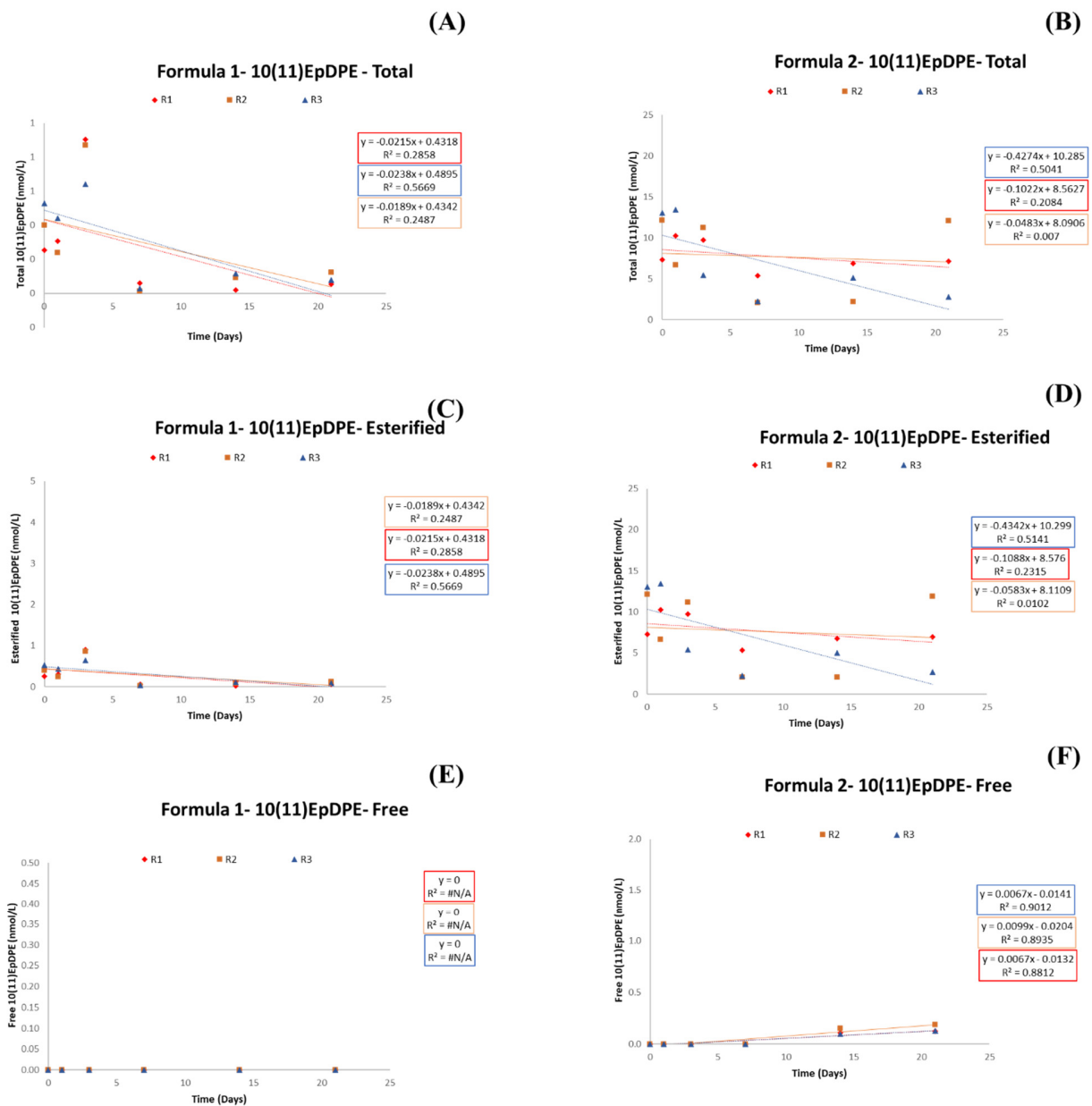


Figure S13. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 10(11)-EpDPE formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

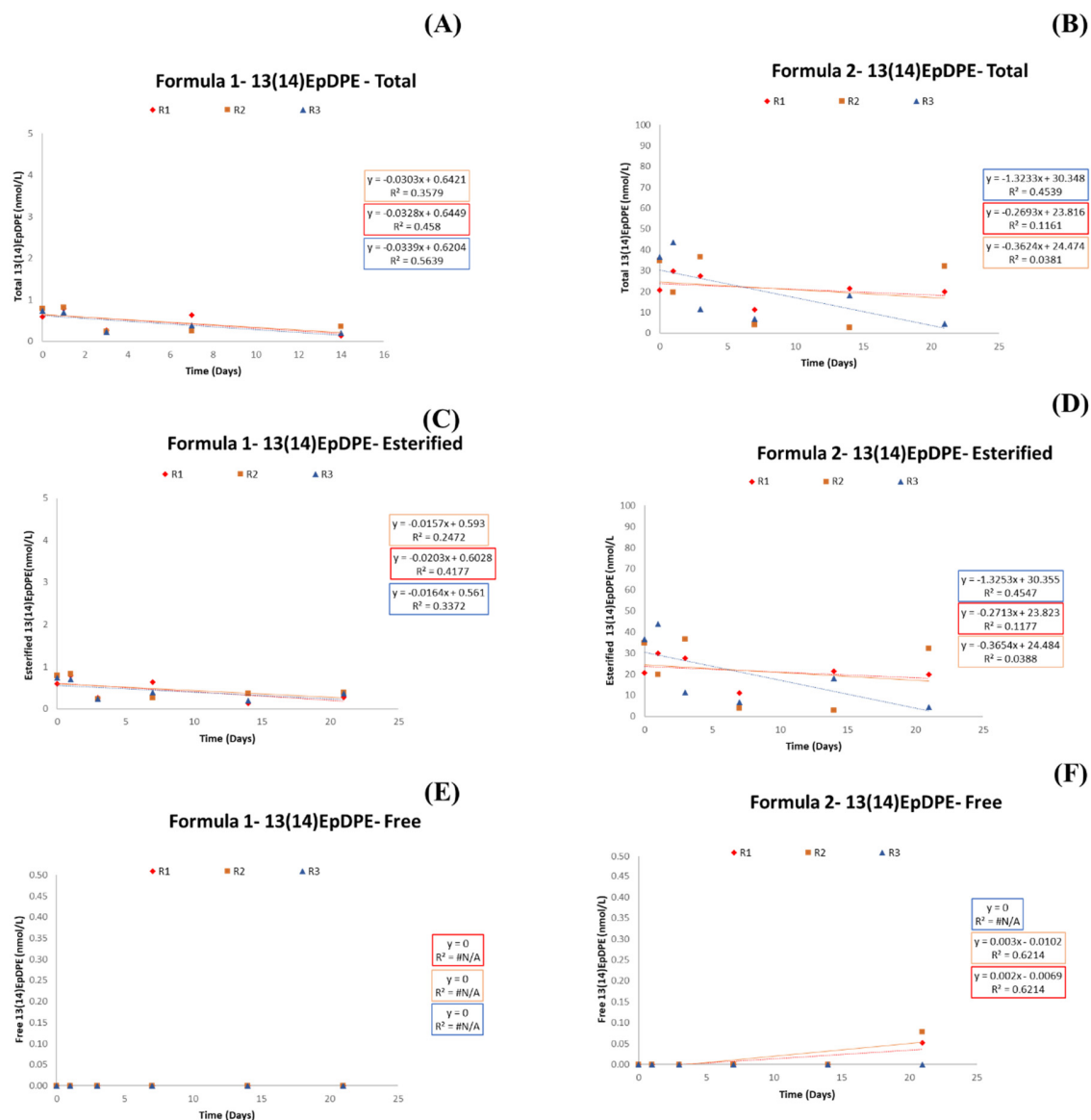


Figure S14. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 13(14)-EpDPE formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

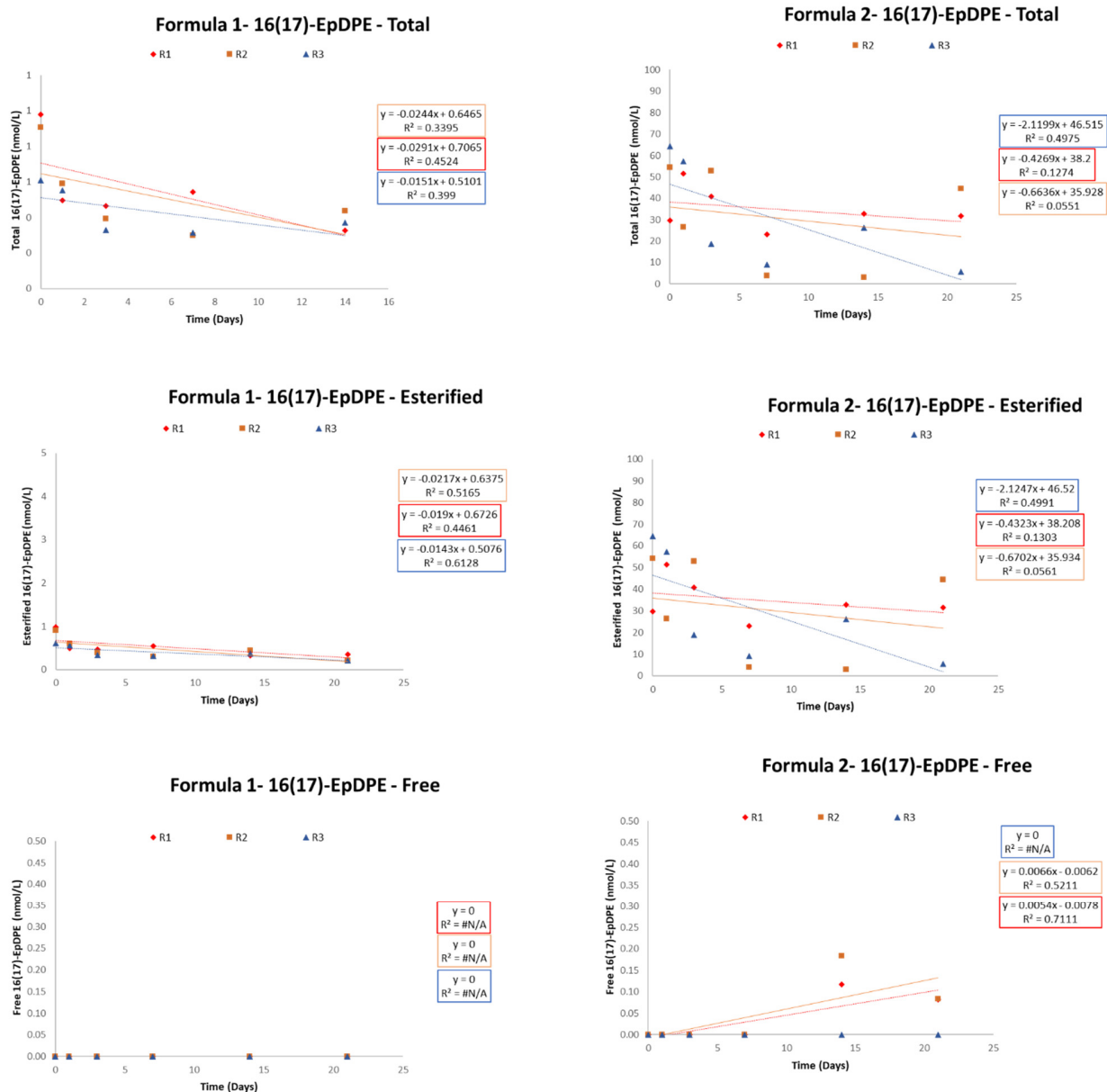


Figure S15. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 16(17)-EpDPE formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

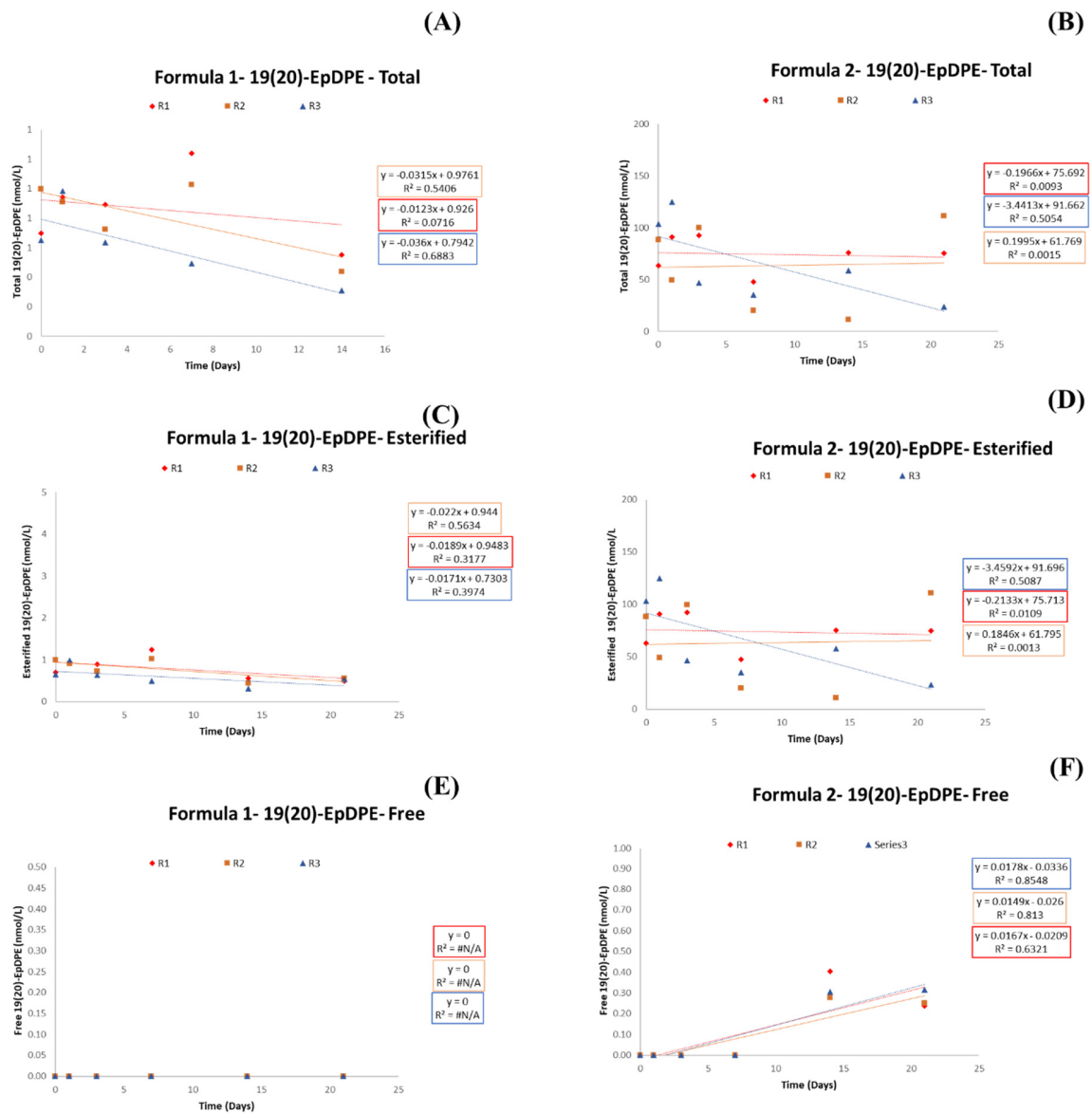


Figure S16. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 19(20)-EpDPE formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.

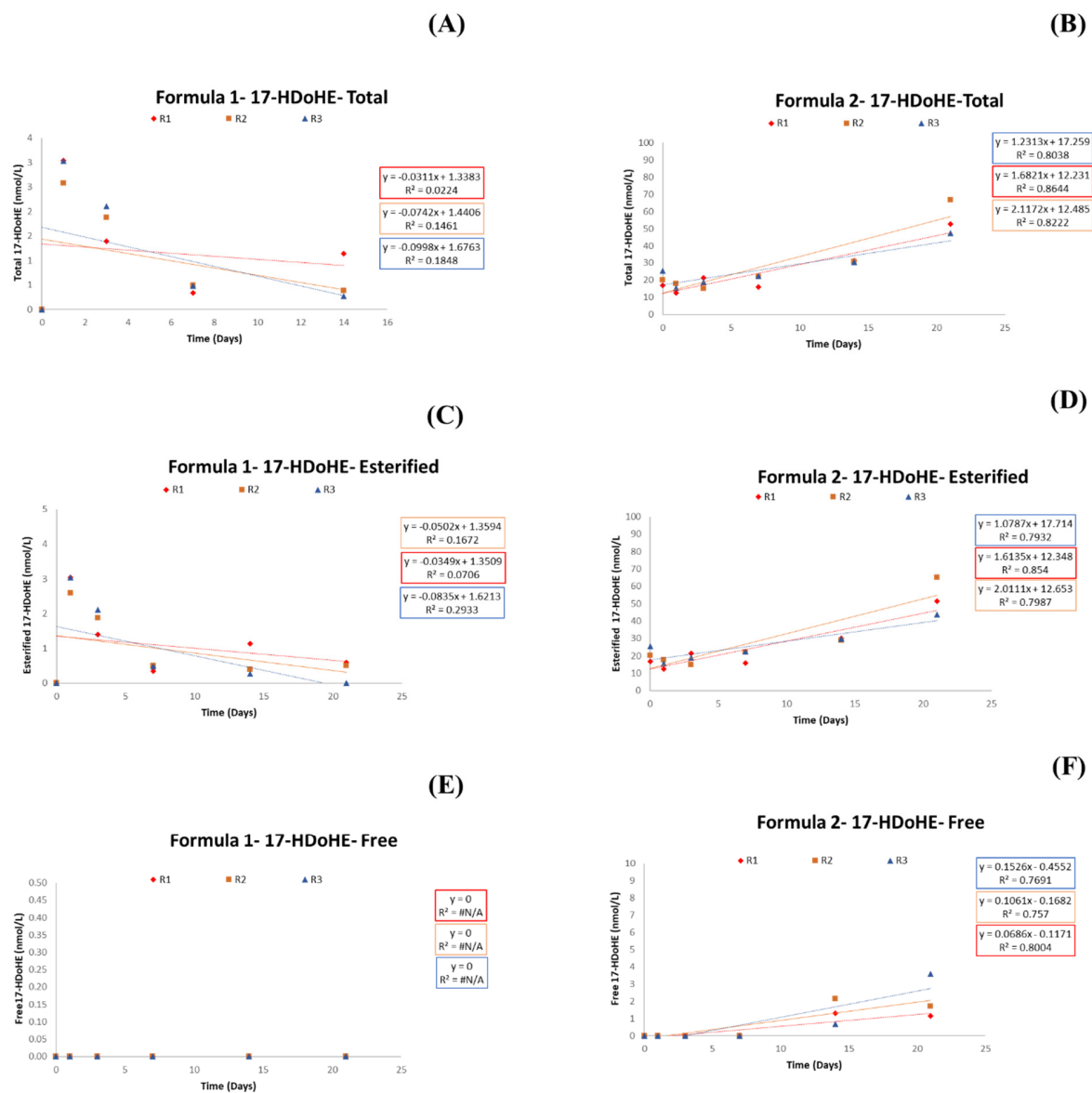


Figure S17. Linear regression fit for Concentration vs. Time plots of total, esterified, and free 17-HDoHE formed in milk infant Formula 1 (no DHA) and Formula 2 (with DHA) under 21 days of storage.