

# RESULTS OF THE CHEMICAL ANALYSES OF 64 FISH OIL-CONTAINING PRODUCTS SOLD IN SOUTH AFRICA.

## A blind study

The analyses were conducted by the Functional Foods Unit of the Cape Peninsula University of Technology (CPUT), who received de-identified product samples from CANSA and supplied CANSA with de-identified results. The determinations for these products were repeated three times.

Compiled by Dr Carl Albrecht, Head of CANSA Research, February 28, 2013.

	Brand Name	Product name	EPA (mg)/capsule measured	EPA (mg)/capsule claimed	DHA (mg)/capsule measured	DHA (mg)/capsule claimed	Total omega-3 fatty acids (mg) measured	% of claimed total omega-3 content	Conjugated Dienes ( $\mu\text{mol/g}$ )	Peroxide Value (meq O <sub>2</sub> /kg oil)	FO=fish oil EE=ethyl ester Com=Combination of FO and EE	Price ( R ) to reach recommended dosage (ISSFAL 500mg EPA+DHA/day)
1	SOLAL Technologies	SOL-OIL Omega 3 & 6	79	88	90	95.5	169	92	6.1	5.6	FO	9.04
2	Pharmamark	Omega-3 Ultra	366	360	287	250	653	107	39.5	8.7	FO	2.04
3	Add Vance Switzerland	ADD Vance Omega 3	142	180	104	120	246	82	11.7	7.1	FO	3.87
4	Pharma Natura (Pty) Ltd	Bettaway Omega 3 Essential Oil	70	90	53	60	123	82	18.3	10.8	FO	3.06
5	Pharmamark	Organo Omega-3	150	180	107	120	256	85	19.2	4.7	FO	1.76
6	SOLAL Technologies	SOLAL Omega-Derm food for the skin	372	510	129	90	500	83	36.8	9.1	FO	3.06
7	Biogen SA	Biogen Omega 3 Isolate	153	198	114	132	267	81	30.1	4.4	EE	1.67
8	Amipro Advanced Development Products (Pty) Ltd	Amipro Ultra Omega 3	407	430	293	290	700	97	26.1	5.3	EE	2.45
9	Natrodale	Natrodale Omega 3	142	188	101	133	244	76	16	8.8	FO	2.52
10	Keynote Health (Pty) Ltd	Thinkwell Absorbamax	175	155	34	18	209	121	4.1	#	FO	4.78

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11	Smart Pharmaceuticals (Pty) Ltd	Smart IQ Omega 3 & 6 & Vit E	96	112.5	73	75	169	90	1.02	28.9	Com	6.14
12	Dis-Chem Pharmacies	Lifestyle Nutrition Omega 3 Fish Oil	74	97	78	117	152	71	15.3	8.8	FO	2.74
13	Holistix	Holistix Fish Oil Omega 3	175	170	137	114	312	110	37	5.2	EE	1.5
14	Dis-Chem Pharmacies	Omega-3 EPA + DHA Fish Oil Concentrate	76	90	47	60	123	82	14.3	8.9	FO	1.69
15	Unique Formulations	Unique Salmon Oil Fish Oils DHA & EPA	62.2	69.3-99	104	89.1-138.6	167	100	29.5	6.7	EE	2.18
16	Formule Naturelle (Pty) Ltd	Naturelle Cold Water Salmon Oil	32.3	NR	29	NR	62	NR	13	3.4	FO	10.81
17	Natrodale	Natrodale Neptune Krill Oil	34.7	75	22	45	57	48	18.4	Coloured	FO	61.77
18	Medi+Rite Pharmacies	Medi+Rite Pharmacy Omega-3 EPA & DHA Concentrate	159.4	180	113	120	273	91	17.5	6.2	FO	1.12
19	Pharmamark	ReVite Omega-3 EPA + DHA Concentrate (double strength 500mg)	75.4	90	47	60	122	82	16.8	14.3	FO	3.86
20	Dis-Chem Pharmacies	Dis-Chem Gold Mega Omega	304.0	260	230	170	534	124	21.1	8.1	EE	2.5
21	SOLAL Technologies	SOLAL Vegetarian Omega 3	9.2	10	341	300	350	113	8.4	3.8	FO	7.33

	Brand Name	Product name	EPA (mg)/capsule measured	EPA (mg)/capsule claimed	DHA (mg)/capsule measured	DHA (mg)/capsule claimed	Total omega-3 fatty acids (mg) measured	% of claimed total omega-3 content	Conjugated Dienes (µmol/g)	Peroxide Value (meq O2/kg oil)	FO=fish oil EE=ethyl ester Com=Combination of FO and EE	Price ( R ) to reach recommended dosage (ISSFAL 500mg EPA+DHA/day)
22	Nativa (Pty) Ltd	Nativa Turbokidz Smart Omega	59.2	60	126	120	185	103	12.7	#	FO	5.26
23	Pharmafrica (Pty) Ltd	Trimega	285.4	300	230	200	515	103	22.4	7.2	EE	1.94
24	Clicks Group Limited	Clicks Salmon Oil Omega 3	153	180	113	120	266	89	28.6	4.5	EE	2.13
25	Georen Pharmaceuticals (Pty) Ltd	Preg Omega	89	91	275	260	363	104	17	9.5	FO	7.96
26	SOLAL Technologies	SOLAL Krill Oil (Neptune-NKO) Omega 3	69	75	43	45	112	93	15	#	FO	26.79
27	Bioharmony (Pty) Ltd	Bioharmony Ultimate Omegas for Bright Sparks	140	165	111	110	251	91	#	7.1	FO	3.65
28	Amipro Advanced Development Products (Pty) Ltd	Metagenics EPA-DHA 720	427	430	304	280	731	103	28.9	12.3	EE	2.62
29	Natrodale	Natrodale Salmon Oil	105	134	105	121	209	82	24.3	10.4	FO	3.97
30	Rejuvenesse Products	OmeX3 Omega-3	97	75	61	55	158	121	28.9	26.0	EE	5.33
31	PureMax Croda Group of Companies	Omega Vite Omega 3 & 6	152	130	118	90	270	123	28.6	19.8	Com	4.81
32	Pharmamark	ReVite Omega-3 EPA + DHA Concentrate (1000 mg)	168	180	114	120	282	94	19.2	8.4	FO	0.81
33	Solgar Vitamin & Herb (UK)	Solgar Omega-3 "700"	359	380	288	260	647	101	23.9	9.9	FO	2.71

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34	Bioharmony (Pty) Ltd	Bioharmony Ultimate Omegas	147	112	114	77	261	138	22.4	6.3	Com	3.83
35	Nativa (Pty) Ltd	Nativa mom2B Omega	129	120	290	300	419	100	30.2	10.4	EE	2.98
36	Amway SA	Nutrillite Omega-3 complex	172	180	132	120	303	101	13.1	9.6	Com	7.88
37	Pinnacle Pharmaceuti- cals Ltd	Pinnacle Salmon Oil	144	180	106	120	250	83	25	3.0	FO	2.17
38	Scientific Sports Nutrition (SSN)	SSN EFA Omega 3 & 6 essential fatty acids	66	72	52	48	118	99	123.2	3.0	FO	4.46
39	Enzyme Process Africa (Pty) Ltd	Enzyme Process Omega Complex	173	180	130	120	303	101	12.9	10.6	Com	3.67
40	Metagenics Inc.	Metagenics EPA-DHA 6:1	486	500	140	80	626	108	#	16.3	EE	3.55
41	Artic Healthcare (Pty) Ltd	Equazen eye q baby	14	14	113	100	128	112	#	13.5	FO	23.4
42	Holford & Associates	Patrick Holford Essential Omegas	165	150	129	100	294	118	25	4.7	Com	5.67
43	The Real Thing	The Real Thing Mega Omega Supreme	320	400	252	300	572	82	19.4	14.4	EE	1.75
44	Durbell Pharmacies	Durbell Omega-3 Deep Sea Fish Oil	153	180	111	120	263	88	5.03	13.9	Com	1.69
45	Artic Healthcare (Pty) Ltd	Equazen eye q 5 years to adults capsules	84	93	29	29	112	92	5.03	6.0	FO	13.2

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46	Vital Health Foods (Pty) Ltd	Vital Salmon Oil	55	67	43	61	99	77	22.9	6.5	FO	2.78
47	Georen Pharmaceuticals (Pty) Ltd	Optimega Omega-3	92	91	290	260	382	109	13.5	5.1	FO	3.31
48	Vital Health Foods (Pty) Ltd	Vital Salmon Oil Omega 3	52	67	43	61	94	74	24.9	15.3	FO	2.91
49	Pharma Natura (Pty) Ltd	Vitaforce Omega 3	78	90	57	60	136	90	18.8	5.7	FO	3.36
50	SOLAL Technologies	SOL-OIL Omega 3 & 6	66	88	75	95.5	142	77	4.2	5.5	FO	10.8
51	Amipro Advanced Development Products (Pty) Ltd	Metagenics EPA-DHA Omega-3 Fish Oils Extra Strength	297	300	206	200	504	101	23.8	23.6	EE	3.31
52	Holgoun Healthcare (Pty) Ltd	Phytosyn3 Krill Omega 3	73	75	33	45	106	88	12.9	#	FO	25.2
53	Absolute Organix UK	Absolute Organix Omega Pure	3	25	205	175	208	104	10.6	8.0	FO	8.02
54	Vitabiotics Ltd	Vitabiotics AquaMarine 2 in 1	60	58	58	53	118	106	11.2	9.2	FO	7.14
55	Kenzahealth	Teen Guard Brain Fuel Meg-3	70	100	46	60	117	73	#	#	FO	15.01
56	Artic Healthcare (Pty) Ltd	Equazen eye q 3 yrs + Omega 3 & 6 oils chews	78	93	27	29	104	85	4.41	41.9	FO	14.22
57	Annique Health & Beauty (Pty) Ltd	Annique Forever Healthy OptiMega	67	77	51	51	118	92	9.4	5.1	FO	18.21
58	Bioter Health CC	Bioter Health Brain Child	25	30	109	125	134	87	22.7	3.1	FO	6.51

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59	Bioter Health CC	Omega Select Salmon Oil Omega 3	166	180	135	120	301	100	33.9	5.4	FO	2.91
60	Vitabiotics Ltd	Vitabiotics Aqua Marine 2 in 1 Fish Oils	93	96.8	85	87.8	179	97	22.3	7.8	FO	1.57
61	The Real Thing	The Real Thing Mega Omega Fish Oil	122	180	90	120	212	71	20.5	6.5	FO	1.22
62	Stone Fountain Products CC	Ocean Gold Fish Liver Oil	54	63.5	71	56.5	125	104	11.1	15.4	FO	1.2
63	TNP Healthcare CC	Thinkwell Liquid	110	216	80	26	190	79	12.4	13.7	FO	9.24
64		Omega Caro E	157	150	113	100	270	108	3.6	#	FO	3.00

**NOTES:**

- **Key: #** Colour interference with assay.
- **Conjugated dienes:** Early indicator of rancidity, values less than 20  $\mu\text{g/mol}$  are acceptable.
- **Peroxides:** Indicator of rancidity, values less than 5 meq O<sub>2</sub>/kg oil are acceptable (Global Organisation for EPA and DHA (GOED) omega-3).
- **Concentration of EPA and DHA:** An acceptable range between 90-110% of the manufacturer's claimed content for EPA and DHA is proposed.
- **Ethyl esters (EE) of fatty acids (FAEE):** These are artificial molecules made by man in the process of extracting and purifying fish oil and have been linked to cytotoxicity (Fatty acid ethyl esters: toxic non-oxidative metabolites of ethanol and markers of ethanol uptake. Best CA and Laposata M, Front. Biosci, 2003, 8, 202-207).
- **Cost:** In order to obtain a comparable price index for each sample the cost in rands for a total of 500 mg DHA and EPA (as a mixture) was calculated from the laboratory determined concentrations of DHA and EPA and the retail price of the product. The reason why a standard of 500mg DHA +EPA was chosen is because this value has been set by ISSFAL (International Society for the Study of Fatty Acids and Lipids - <http://archive.issfal.org/>) as the recommended daily dose (The cost for Omega Caro E was R3.00 per 500 mg DHA/EPA and R5.52 on average).
- **Summary:** Only 7 out of 64 (11%) of the products analysed complied with the following criteria set by CANSA. Cost R3 or less for 500mg DHA and EPA; conjugated diene concentrations of 20 or less  $\mu\text{g/mol}$ ; 80% or more of the claimed amount of DHA and EPA per capsule and omega fatty acids as triglycerides and not as ethyl-esters of fatty acids. Omega Caro-E is one of the 7 elite products complying with all four of these criteria.

[Download the graphic presentation of this data here.](#)