

Antioxidant tocopherol and carotenoid content of seed and marine oils

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There are now numerous studies documenting the benefits of a Mediterranean diet, high in olive oil rather than saturated fats, for the prevention of atherosclerosis (1). The benefits of olive oil may be attributed to both monounsaturated fatty acid and their carotenoid content. The low mortality from cardiovascular disease (CVD) in Greek immigrants in Australia, despite a relatively high incidence of Type 2 diabetes and other recognised CVD risk factors (2), suggests a dietary protective mechanism which may be related to high olive oil intake. We have used a HPLC assay (3) for the measurement of tocopherols and carotenoids in two marine oils and 12 seed oils.

Results

- Marine oils, which are rarely consumed by the public, have the highest concentration of carotenoids of all oils tested.
- Sunflower oil has the highest tocopherol levels but no carotenoids.
- Palm oil is very rich in β carotenes (but is not very palatable).
- Family produced by traditional methods (non-commercial) olive oils has the highest carotenoid levels amongst the olive oils tested.

Concentration of tocopherols and carotenoids in various oils (nmol/g)

Oil brand	Vitamin E		Carotenoid antioxidant					total carotenoids*
	γ -tocopherol	α -tocopherol	13- β -carotene	lutein	α -carotene	β -carotene	lycopene	
Seed oils								
Caroteno palm oil (Malaysia)	7	768	1454	–	–	956	–	2433
Crisco peanut oil (Australia)	328	956	–	–	–	–	–	–
Crisco sunflower oil (Australia)								
Olive oils								
MVB oil (French)	60	3256	–	–	–	–	–	–
MVB oil (French)	44	524	3.0	2.0	–	–	–	5.0
Basso extra light (French)	31	1051	3.2	1.4	–	–	–	4.6
MVR oil (Spanish)	32	493	2.8	1.3	–	–	–	4.1
MORO oil (Spanish)	14	307	–	–	–	–	–	–
Bertoli extra light (Australia)	9	957	1.2	–	–	–	–	1.2
Vassiliou family 1998 (Greek)	20	836	1.5	2.6	–	–	5.9	9.3
Vassiliou family 1999 (Greek)	12	334	4.7	1.4	1.3	8.2	–	15.5
Vassiliou family 2000 (Greek)	6	688	1.9	0.9	–	–	3.4	6.2
Marine oils								
Marine mussel oil (Australia)	562	3079	32.8	5.1	16.9	32.1	10.8	97.6
Krill oil **(Australia)	76	492	2.2	2.0	1.6	1.7	3.3	10.8

* The sum of lutein, α -carotene, β -carotene, 13- β -carotene and lycopene; **from mutton bird; – not detected;

Conclusions

The health benefits of olive oil may be increased by their carotenoid antioxidant content, which varies considerably depending on source and manufacturing process. This information should be included on product labelling.

References

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