

ANALYSIS OF FATTY ACIDS IN ADIPOSE TISSUE OF AUSTRALIANS

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Evidence from the few studies of the fatty acid composition of adipose tissue from Australians have shown that the proportion of linoleic acid has increased in the last decade (Mackie et al. 1987).

As part of a case-control study into the relationship between adipose tissue fat composition, vitamin E level and melanoma, over 100 control subjects and patients at first presentation of melanoma were analysed, using GC and HPLC respectively. The samples were surgically obtained from subjects aged 21-75 years (98 males, 110 females).

As there was little difference in mean fatty acid composition between melanomas and controls, the data was pooled to look at age and sex differences. The results are shown in the Table.

	Male ¹ (n=98)	r ²	Female ¹ (n=110)	r ²
Total saturates (%)	35.4 ± 5.0	NS	33.4 ± 5.3	NS
range	18.8 - 48.4		21.6 - 47.3	
Total monounsaturates (%)	51.6 ± 5.2	NS	53.8 ± 5.3	NS
range	43.2 - 75.3		42.1 - 65.9	
Total polyunsaturates (%)	12.9 ± 3.9	0.31	13.5 ± 4.1	NS
range	4.2 - 24.0		5.4 - 27.8	
P/S ratio	0.38 ± 0.14	0.24	0.42 ± 0.17	0.24
range	0.10 - 0.94		0.13 - 0.93	
Linoleic acid (%)	11.7 ± 3.7	0.26	12.3 ± 3.9	NS
range	3.4 - 21.8		5.2 - 26.8	
Linoleic acid (mg/g)	33.3 ± 20.3	0.55	37.0 ± 18.1	0.22
range	0.5 - 101.6		1.3 - 95.8	
Vitamin E (µg/g)	77.4 ± 91.8	0.30	66.3 ± 58.5	NS
range	N.D. - 696.4		N.D. - 376.1	

¹ Mean (± SD).

² Correlation coefficient for age 21 to 50.

N.D. Not detected. NS Not significant.

Like past studies, we found that females had a higher mean proportion of linoleic acid and total polyunsaturates than males. We have also shown that there are significant correlations between age and certain lipid parameters. The P/S ratio and linoleic acid concentration increased significantly ($P < 0.02$) with age from 21-50 years in both men and women, whereas the polyunsaturated percent, linoleic percent and vitamin E concentration only increased with age in men.

We conclude that the mean percent of linoleic acid in adipose tissue has continued to increase since 1985 and that the unsaturation level of adipose tissue also increases with age.

MACKIE, B.S., MACKIE, L.E., CURTIN, L.D. and BOURNE, D.J. (1987). *Nutr. Cancer.* 9: 219.

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