

Buccal cells as biomarkers of fat intake

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Background – Buccal cells have been used as biomarkers of n-3 long chain polyunsaturated fat intake but more information is needed to document their usefulness as markers of saturated fat and linoleic acid intake.

Objective – To measure the effect of a saturated fat or a linoleic acid rich diet on the fatty acid composition of buccal cells.

Design – Crossover study with two diets, one high in saturated fat the other high in linoleic acid. Twenty-four participants consumed each diet for eight weeks. Fatty acid composition of buccal cell, plasma, and erythrocyte phospholipids was measured at weeks 0, 2, 4, 6, and 8 of each diet.

Outcomes – Linoleic acid content of buccal cell phospholipids increased from 8.4 (1.2) mol% [mean (SD)] to 10.3 (1.6) mol% ($P < 0.01$) by week 2 of the linoleic acid-rich diet and remained unchanged for the next 6 weeks. A similar time course of change occurred with linoleic acid in plasma and erythrocyte phospholipids. Myristic acid (C14:0) and pentadecanoic acid (C15:0) in plasma and erythrocyte phospholipids reached a maximum increase in plasma and erythrocyte phospholipids within 2 weeks of initiating the saturated fat-rich diet but were unchanged throughout the 8 week saturated fat diet in buccal cell phospholipids.

Conclusions- Buccal cell fatty acids appear to be good biomarkers of linoleic acid intake but not of saturated fat.