


19. Sebedio JL. Pentadecanoic acid as a valid biomarker for dairy intake, because low amounts of this fatty acid are also present in other foods such as fish, beef, veal, and lamb. Although doubts regarding the overall validity of pentadecanoic acid as a biomarker for dairy intake have been previously raised by other researchers (1, 2), the majority of observational studies have documented a significant correlation of pentadecanoic acid with dairy intake (3–5). In line with these previous reports, we found that serum pentadecanoic acid was correlated with total dairy intake (r = 0.20, P < 0.0001) as well as with total milk (r = 0.13, P = 0.0006) and total cheese (r = 0.16, P < 0.0001) intakes in the Insulin Resistance Atherosclerosis Study (IRAS) cohort (6). In contrast, we did not find pentadecanoic acid to be correlated with total fish intake (r = −0.04, P = 0.31) or oily fish intake (r = −0.02, P = 0.68), nor was pentadecanoic acid correlated with serum EPA (r = 0.05, P = 0.19) or serum DHA (r = −0.05, P = 0.24) in IRAS participants. As we previously reported, fish intake in this cohort is very low, with a median consumption of 1.1 servings/ wk; and oily fish, specifically, was consumed at only 0.38 servings/wk on average (7), indicating that fish intake in this cohort was unlikely to be a major contributor to pentadecanoic acid in serum. Nevertheless, we agree that it is possible that in other populations with higher intakes of fish, pentadecanoic acid may be associated with the consumption of foods other than dairy products. Furthermore, we did not find pentadecanoic acid to be correlated with intakes of beef (r = 0.07, P = 0.06), cabbage (r = −0.01, P = 0.80), or chicken (r = −0.04, P = 0.33). The IRAS food-frequency questionnaire did not include individual questions regarding veal, lamb, mutton, lard, cucumber, or seaweed intake. Despite accumulating evidence suggesting that pentadecanoic acid can be a reliable biomarker for dairy intake, the true relation between dairy intake and circulating pentadecanoic acid can only be ascertained by using controlled feeding studies in which the quantity and quality of the dairy products are known (2).

Ratnayake also raised a technical concern regarding the identification of pentadecanoic acid peaks by using gas chromatography (GC) analysis. We agree that accurate peak identification of fatty acids using GC is a concern due to the potential for overlapping peaks of fatty acids that coelute. To overcome this issue in our study, peaks were identified by using GC-FID (flame-ionization detector), as previously described (8), were confirmed with the use of mass spectrometry, as well as various internal quality assurance and quality-control procedures, including the following: testing new methods against a library of compounds to ensure chromatographic separation, comparing results against the historical average and range of each metabolite, manual peak reviews, and testing across many types of columns.

In summary, although the existing literature is not in full agreement regarding the utility of pentadecanoic acid as a marker of dairy intake (9), the majority of existing studies support it as a biomarker for dairy consumption. Importantly, correlations in our cohort suggest that this is the case for IRAS participants as well.

The authors had no conflicts of interest.

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REFERENCES


