A comparison of whey to caseinate

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TO THE EDITOR: Reitelseder et al. (4) are to be congratulated on their recent work. The use of intrinsically labeled proteins to study postexercise muscle protein accretion is a powerful tool, and the results are very interesting. I am concerned, however, by their interpretation that they have compared casein, as it exists in milk, to isolated whey when what they used was a not micellar casein from milk but caseinate. In the original seminal study in which the slow (casein) and fast (whey) protein paradigm was established, Borie et al. (1) used native milk protein as micellar casein. Micellar casein, when consumed, clots in the stomach, forming relatively large globules of protein that empty from the stomach much more slowly than acid-soluble whey protein and is thus digested slowly (2, 3). The aminoacidemia seen following ingestion of the casein and whey in the subjects studied by Reitelseder et al. is markedly different from that reported by workers using true micellar casein (1–3, 5). In fact, the relative lack of difference in aminoacidemia reported by Reitelseder et al. between their whey and casein conditions is, in all likelihood, due to their use of calcium caseinate. Calcium caseinate, as distinguished from micellar casein, is soluble (and is thus used in numerous food processes), and so digestion rates of this form of casein are not likely to be overly different from those of whey (see the authors’ Fig. 4F). Thus, the aminoacidemia reported in this investigation (see their Fig. 4) reflects not differential digestion kinetics but merely slightly differing amino acid contents, per their Table 1. Thus, it would have been most correct for the authors to have labeled their graphs and tables with whey vs. caseinate and not merely casein. Although the authors dedicate some space in their paper to this distinction, it is a critical one and one that the authors should perhaps consider in a future experiment? Interestingly, given the results of their investigation (see their Fig. 4) reflects not differential digestion rate but merely slightly differing amino acid contents, per their Table 1. Thus, it would have been most correct for the authors to have labeled their graphs and tables with whey vs. caseinate and not merely casein. Although the authors dedicate some space in their paper to this distinction, it is a critical one and one that the authors should perhaps consider in a future experiment? Interestingly, given the results of their investigation, the authors conclude, “Milk, easy accessible and containing both whey and casein, could very likely be an optimal choice.” If milk proteins are more beneficial, then casein would be in a micellar form, and thus a slower aminoacidemia would result upon ingestion, and the results would be similar to those we (5) have reported, which did not show a benefit of casein ingestion on resting or postexercise muscle protein fraction synthetic rate, albeit with nonintrinsically labeled proteins and whey hydrolysate. I agree with the authors, however, that blends of whey (fast) and micellar casein (slow) or caseinates (slower) may offer an optimal choice, but at what dose? Would the authors suggest that subjects consume the sum total of the dose they used: 0.6 g/kg lean body mass (i.e., 20 g of caseinate and 20 g of whey) to recapitulate the conditions that yielded their original data? If so, a 40-g protein dose seems relatively high and certainly at the high end of what someone would consume in one meal. Finally, I strongly urge that in future work the authors make measurements of their subjects at rest and compare the postexercise response to that condition; it would strengthen their conclusions. I look forward to more work from this and other groups using this methodology.

DISCLOSURES

No conflicts of interest are reported by the author.

REFERENCES