P29 - More Than Solubility: Understanding Clinical Implications of Updated Analytical Testing of Dietary Fiber Within Enteral Nutrition Formulas

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Background: In 2009, the Codex Committee on Nutrition and Foods for Special Dietary Uses accepted an updated methodology for fiber detection (AOAC 2009.01, which was later refined to AOAC 2011.25) as the preferred method for total, soluble, and insoluble fiber analysis. The FDA does not advise on specific AOAC methods to be used for generating nutritional labels & this is not required by the FDA for the labels of enteral nutrition formulas (medical foods). The updated methodology detects additional fiber types including galactooligosaccharides (GOS), polydextrose, resistant maltodextrin, raffinose/stachyose, and additional types of inulin and fructooligosaccharides (FOS). These sources of dietary fiber have always been a part of the food but were not detectable. With the emergence of plant protein sources, blenderized food formulas, and plant-based thickeners/gums in medical food formulas, the investigation into the characteristics of these newly detected fibers will aid in our understanding. Recently published large review studies conclude that mixed fiber formulas have been demonstrated to be well-tolerated and safe. However, clinical practices may continue to restrict the intake of any dietary fiber in certain medical conditions. Of note, for all clinicians to consider is the actual fiber content of formula or food deemed “fiber free”.

Methods: Samples of four different enteral formulas were tested using the updated AOAC 2011.25 method and the older AOAC 991.43 to see what, if any, differences existed. The protein sources within the formulas consisted of one or more of the following: pea protein, soy protein isolate, sodium caseinate, calcium caseinate, and/or milk protein isolate. Of the formulas tested, one did not have a source of dietary fiber listed within the ingredients panel and claimed to be fiber free.

Results: Testing using the updated methodology reveals an increase in the total fiber content of the formula samples with added fiber, without added fiber, and with all types of protein sources. The formula sample without an added fiber ingredient, per the FDA definition, had detectable levels of soluble and insoluble fiber: 4.3 g of total fiber, using the AOAC 2011.25 methodology.

Conclusion: The realization that we have likely been providing dietary fiber to our most fragile and complex patients should cause us to seek to understand the benefits of all sources and characteristics of dietary fiber, even if they are not yet recognized by the FDA. Additional characteristics of fiber that may not be as well understood or recognized by clinicians include fermentability and viscosity. The researchers of this small pilot study hope to broaden the testing of dietary fiber to additional formulas, comparing the AOAC 2011.25 and AOAC 991.43 to attempt to understand the degree of differences between the two methodologies. An additional goal of the next phase of this research is to survey clinicians about clinical practice and knowledge of the topics mentioned here, to identify educational gaps. Multiple opportunities exist to help improve our understanding of this topic: additional education to clinicians on nutrition declaration on labels and how this updated methodology impacts our clinical practice, specifically around the use and benefit of fiber in the critical care setting.

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Table 1. Comparison of Total Fiber, Soluble Fiber, and Insoluble Fiber Content of 4 Different Enteral Formula Samples, Using the AOAC 2011.25 and AOAC 991.43 Methodology.

Formula	AOAC 2011.25	AOAC 991.43
Sample A: Pea protein with added prebiotic fiber and gum	10.53 g total 3.86 g soluble 6.67 g insoluble	4.9 g total 2.8 g soluble 2.1 g insoluble
Sample B: Pea protein without added prebiotic fiber; contained gum	4.56 g total 0.7 g soluble 3.86 g insoluble	2.81 g total 1.05 g soluble 1.76 g insoluble
Sample C: Dairy & soy protein with added prebiotic fiber and gum	6.3 g total 5.8 g soluble 0.5 g insoluble	4.3 g total 3.8 g soluble 0.5 g insoluble
Sample D: Dairy & soy protein labeled "fiber free"; contained gum	4.31 g total 3.80 g soluble 0.51 g insoluble	Test Error

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