

MEASUREMENT OF DIETARY FIBER AND DIETARY FIBER COMPONENTS

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Methodology for the measurement of dietary fiber has been improving over the past 5 decades. The AOAC total dietary fiber procedure (TDF; AOAC Method 985.29) evolved from the detergent fiber and the crude fiber methods. Subsequently, the TDF method has been modified to allow measurement of soluble and insoluble fiber, and the buffer system has been improved to minimise problems associated with calcium phosphate formation. Over the past decade, the acceptance of resistant starch (RS) and non digestible oligosaccharides (NDO) as dietary fiber has resulted in the development, validation and acceptance of specific methods for RS (AOAC 2002.02) and for several NDO, such as polydextrose, resistant maltodextrins, fructo-oligosaccharides (FOS) and galacto-oligosaccharides (GOS). The requirement to measure RS and each NDO separately, and possible problems of over-estimation of RS and FOS, makes the analysis of “total” dietary fiber complex and tedious. With the obesity problem in the western world and the association of this with carbohydrate intake, there is an immediate need for a direct measure of glycemic (available) carbohydrates. In this paper, I will describe an integrated format for the measurement of dietary fiber (defined here as high molecular weight soluble and insoluble fiber and resistant starch), and of available carbohydrates (defined here as non-resistant starch plus maltodextrins, sucrose, D-glucose, D-fructose and the D-glucose component of lactose). Modifications to AOAC/AACC dietary fiber methods that simplify pH adjustment, sample handling and fructan removal will be described, as well as further developments in NDO analysis.