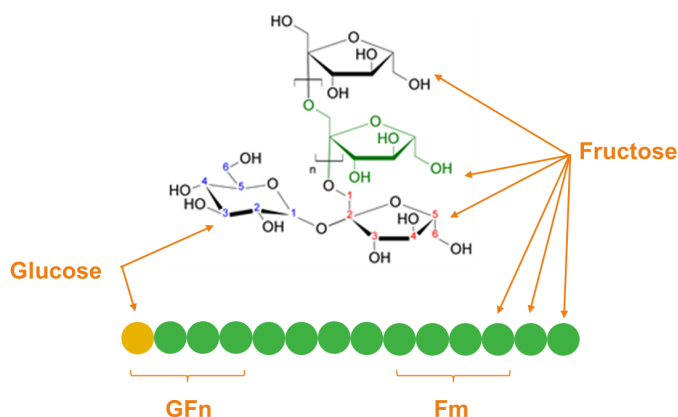


MEASUREMENT OF TOTAL FRUCTAN IN FOODS ACCORDING TO AOAC 999.03

The Carbohydrate Competence Centre (Eurofins Food Testing NL, The Netherlands) is proud to announce the availability of the AOAC 999.03 based method as a completely validated and accredited test for fructans in all food matrices according to ISO 17025. The method is available with the test codes HEC3D (solids) and HEC3E (liquids). The method is not applicable to highly depolymerized fructans.

Introduction

Fructans, inulin and fructo-oligosaccharides (FOS) are used as ingredients in all kinds of food, feed and pet food products. These carbohydrates occur naturally in many foods of vegetable origin, such as onions, Jerusalem artichokes, asparagus, garlic, and chicory. Fructans pass the stomach and small intestine unchanged and are fermented in the large intestine. As prebiotics they stimulate growth and activity of gastrointestinal microbiota and benefit our health having a low glycemic response.



Inulin vs FOS

Inulin consists of $\beta(2\rightarrow1)$ linked fructose blocks and may contain a starting, non-reducing, glucose. In native inulins (e.g. chicory) the number of fructose units can be over 60. Inulin consists of a range of molecules (both GFn- and Fm-type). GFn are non-reducing carbohydrates, while Fm molecules have a reducing fructose.

FOS is a low molecular weight material with degree of polymerisation (DP) up to 10. There are two types of FOS compounds, being materials prepared either by hydrolysis of inulin or by enzymatic elongation of sucrose. The first type of FOS products are mainly mixtures of primarily oligofructose (Fm) and some small inulin (GFn) mole-

cules, while the later one is primarily containing GFn-type of FOS with n ranging from 2-5.

Functionality & Markets

FOS and inulin improve physical and structural properties such as hydration, oil-holding capacity, viscosity, texture, sensory characteristics, taste and shelf life. Fructans are used as: Dietary fiber; Prebiotic; Sugar replacement.

Typical applications are sugar free or low calorie products, non-artificial sweetener in confectionary; Fiber-rich (label claim) products in retail, e.g. bakery, breakfast cereals, pasta, dairy, ice cream, snacks; Infant formula & adult nutrition (mandatory on label); Savory; Gluten-free products; Health care nutrition (supplements).

Methods of fructan analysis

Fructans are not correctly quantified by the classical dietary fiber tests, like the AOAC 985.29 and 991.43. Different analytical methods are described for fructan analysis, e.g. AOAC 997.08, 999.03 and 2016.14. The methods have different scopes and underlying principles, as such there is not one 'golden standard' method available. It is necessary to choose the method that is best suitable for your product. On the next page a decision tree will help guide you to choose the correct test.

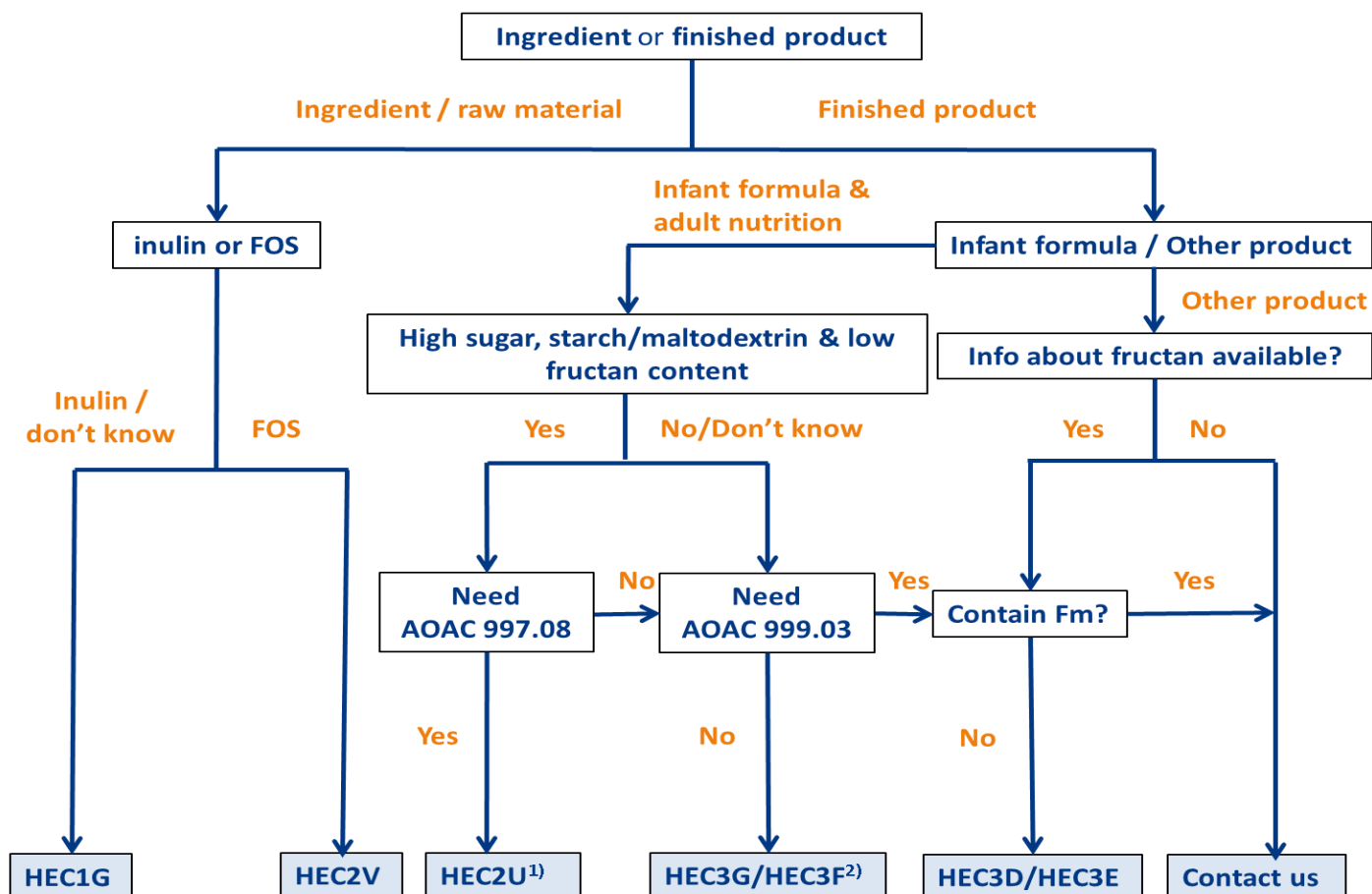
AOAC 999.03 vs AOAC 997.08

The AOAC 999.03 differs from the AOAC 997.08 in that samples with high contents of monosaccharides, sucrose, maltodextrin or starch can be accurately measured.

Advantages: Suitable for all kind of foods. Relative fast test, e.g. just one chromatogram is needed per sample.

Disadvantages: Incomplete recovery of oligofructoses (Fm) leading to an underestimation of 10–20% for certain FOS ingredients.

Decision tree to choose the most suitable fructan test



- 1) Suitable for inulin or hydrolyzed inulin with avg. DP=10 and ratio fructose/glucose 9:1. Not suitable for FOS such as Actilight, inulin with DP>10 or samples with very high sucrose concentrations.
- 2) The test is conform AOAC 2016.14. For matrices other than infant formula and adult nutrition, please contact us.

Our tests at a glance

Test code	Analytical method
HEC1G / HEC2V / HEC2U	In house method based on AOAC 997.08
HEC3E (liquid samples) HEC3D (solid samples)	AOAC 999.03 (equivalent & accredited)
HEC3G HEC3F (ready for consumption)	AOAC 2016.14 (conform)
HEC30	Fingerprint (qualitative)
HEC0R (quant. FOS DP2-DP7)	in house method

Also available for your exports to China: **GB 5009.255-2016** (Chinese standard for fructan determination in food). Test codes HEC3I (FOS, av. DP=4), HEC3J (Inulin, av. DP=10), HEC3K (polyfructose, av. DP=23). Contact us for more information.

Contact us

Websites: www.carbohydratetesting.com & www.eurofinsfoodtesting.nl/en

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