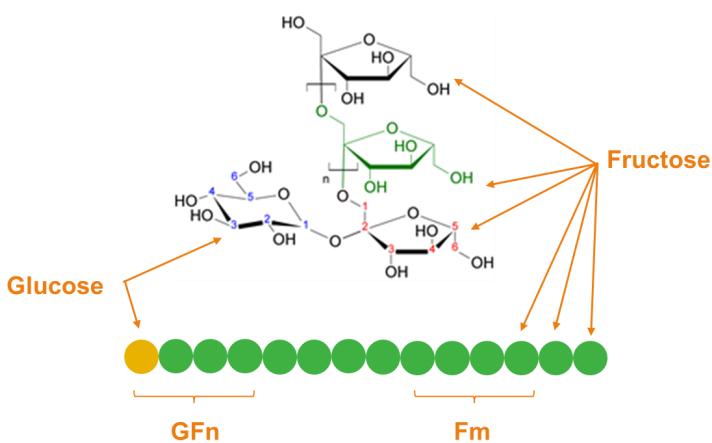


MEASUREMENT OF TOTAL FRUCTAN IN FOODS ACCORDING TO AOAC 999.03

The Carbohydrate Competence Centre is proud to announce the availability of the AOAC 999.03 based method as a completely validated test for all food matrices according to ISO 17025. The same test is in the process of receiving the accreditation status in 2017. This method is available with the test codes HEC3D (solids) and HEC3E (liquids). This method is not applicable to highly depolymerized fructans.

Introduction

Fructans, inulin and fructooligosaccharides (FOS) are increasingly used as a health enhancing ingredients in all kinds of foodstuff as well as feed and pet food products. Both inulin and FOS pass the stomach and small intestine unchanged and are fermented in the large intestine where they stimulate the growth and/or activity of the gastrointestinal microbiota and are conferring benefits upon hosts health. They are thus considered as prebiotics.



Inulin

Inulin molecules consist of linear $\beta(2 \rightarrow 1)$ linked fructose blocks and may contain a starting, non-reducing, glucose moiety. In native inulins (e.g. chicory) the total number of fructose units can be over 60. Inulin consists of a broad range of molecules (both of GFn- and Fm-type) with a number of fructose units (on average 2-50). GFn are non-reducing carbohydrates, while Fm molecules have a reducing fructose moiety.

Fructooligosaccharides

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

Methods of fructan analysis

Currently, different AOAC analytical methods are described for fructan analysis in foodstuff: AOAC 997.08, AOAC 999.03, and AOAC 2016.14. These methods have different fields of application in the analysis of (food) samples. The different underlying principles of analysis are the reason that there is not one 'golden standard' method yet available. It is thus necessary to always choose the method that is best suitable for your product. At the end of this brochure you will find a decision tree that will help guide you to choose the correct test.

AOAC 999.03 vs AOAC 997.08

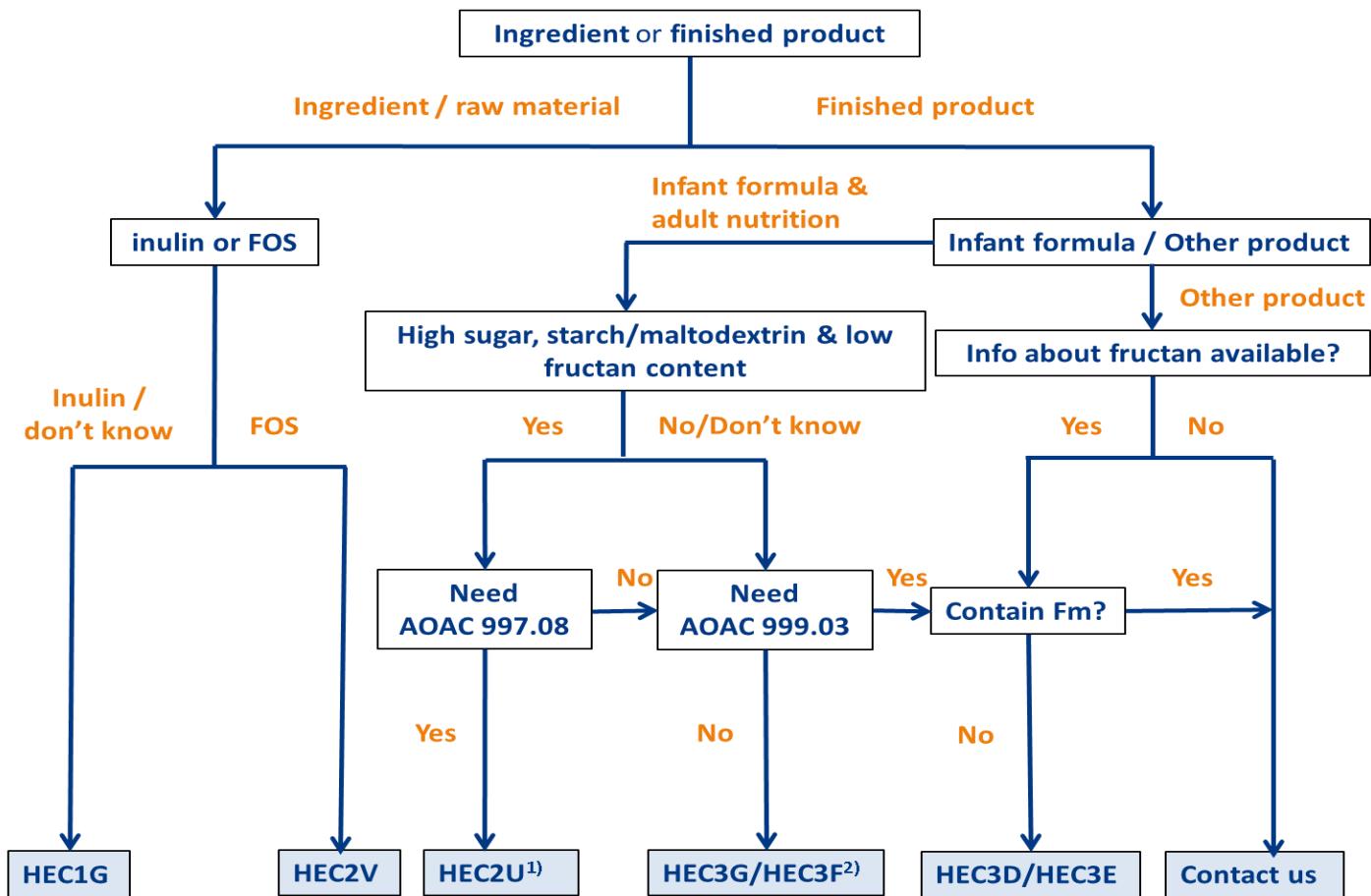
The AOAC 999.03 method differs from the AOAC 997.08 in that here all monosaccharides present, after the combined amylases and sucrase treatment, are removed by converting them into alditols (borohydride reduction). So, also samples with high contents of monosaccharides, sucrose, maltodextrin and/or starch can be accurately measured in this procedure because subtractions are not needed.

Advantages: Well suited for all kind of foods, especially when chromatography is applied. Just one chromatogram is needed for each sample to analyse.

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) 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)
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). Contact us for more information.

Contact us

Website: www.carbohydratestesting.com

Email: carbohydrates@eurofins.com