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## Fructalose (R), a mixture of fructans obtained from enzymatic hydrolysis of chicory inulin, and normal defecation: evaluation of a health claim pursuant to Article 13(5) of Regulation (EC) No 1924/2006

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## OPINION OF THE SCIENTIFIC PANEL

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# Frutalose<sup>®</sup>, a mixture of fructans obtained from enzymatic hydrolysis of chicory inulin, and normal defecation: evaluation of a health claim pursuant to Article 13(5) of Regulation (EC) No 1924/2006

EFSA Panel on Nutrition, Novel Foods and Food Allergens (NDA)

### Abstract

Following an application from Sensus B.V. (Royal Cosun), submitted for authorisation of a health claim pursuant to Article 13(5) of Regulation (EC) No 1924/2006 via the Competent Authority of the Netherlands, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to Frutalose<sup>®</sup> and maintenance of normal defecation. The scope of the application was proposed to fall under a health claim based on newly developed scientific evidence. The Panel considers that Frutalose<sup>®</sup>, a mixture of fructans obtained from enzymatic hydrolysis of chicory inulin, is sufficiently characterised. The claimed effect proposed by the applicant is 'contributes to regular bowel function by increasing stool frequency'. The proposed target population is 'the general healthy adult population'. Maintenance of normal defecation is a beneficial physiological effect provided that it does not result in diarrhoea. One human intervention study showed an effect of Frutalose<sup>®</sup> on the maintenance of normal defecation by increasing stool frequency and improving stool consistency (softer stools) when consumed daily at a dose of 15 g for 8 weeks. The results have not been replicated in other studies. There is a plausible mechanism by which Frutalose<sup>®</sup> could exert the claimed effect. The Panel concludes that the evidence provided is insufficient to establish a cause and effect relationship between the consumption of Frutalose<sup>®</sup> and maintenance of normal defecation under the proposed conditions of use.

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**Keywords:** Frutalose<sup>®</sup>, oligofructose, fructo-oligosaccharides, defecation, stool frequency, stool consistency, health claim

**Requestor:** Competent Authority of The Netherlands following an application by Sensus B.V. (Royal Cosun) International Limited.

**Question number:** EFSA-Q-2020-00631

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## 1. Introduction

### 1.1. Background and Terms of Reference as provided by the requestor

Regulation (EC) No 1924/2006 harmonises the provisions that relate to nutrition and health claims, and establishes rules governing the Community authorisation of health claims made on foods. As a rule, health claims are prohibited unless they comply with the general and specific requirements of this Regulation, are authorised in accordance with this Regulation, and are included in the lists of authorised claims provided for in Articles 13 and 14 thereof. In particular, Article 13(5) of this Regulation lays down provisions for the addition of claims (other than those referring to the reduction of disease risk and to children's development and health), which are based on newly developed scientific evidence or include a request for the protection of proprietary data, to the Community list of permitted claims referred to in Article 13(3). According to Article 18 of this Regulation, an application for inclusion in the Community list of permitted claims referred to in Article 13(3) shall be submitted by the applicant to the national competent authority of a Member State, which will make the application and any supplementary information supplied by the applicant available to the European Food Safety Authority (EFSA).

### 1.2. Interpretation of the Terms of Reference

EFSA is requested to evaluate the scientific data submitted by the applicant in accordance with Article 16(3) of Regulation (EC) No 1924/2006. On the basis of that evaluation, EFSA will issue an opinion on the scientific substantiation of a health claim related to: Fructose<sup>®</sup> and maintenance of normal defecation.

The present opinion does not constitute, and cannot be construed as, an authorisation for the marketing of Fructose<sup>®</sup>, a positive assessment of its safety, nor a decision on whether Fructose<sup>®</sup> is, or is not, classified as a foodstuff. It should be noted that such an assessment is not foreseen in the framework of Regulation (EC) No 1924/2006.

It should also be highlighted that the scope, the proposed wording of the claim, and the conditions of use as proposed by the applicant may be subject to changes, pending the outcome of the authorisation procedure foreseen in Article 18(4) of Regulation (EC) No 1924/2006.

## 2. Data and methodologies

### 2.1. Data

#### Information provided by the applicant

##### Food/constituent as stated by the applicant

According to the applicant, the food for which the health claim is made is 'Fructose<sup>®</sup> chicory oligofructose. The application relates to oligofructose derived from chicory inulin, only. The studies in this application have been carried out with specifically oligofructose from chicory. Oligofructose from chicory may be produced to give liquid or powder forms. The active principle for the health effects relates to the oligofructose content described as fructans of degree of polymerisation (DP) 2–10 (inclusive)'.

##### Health relationship as claimed by the applicant

According to the applicant, the health effect is related to 'contributes to maintenance of normal defecation or maintains regular bowel function by increasing stool frequency'.

##### Mechanism by which the food/constituent could exert the claimed effect as proposed by the applicant

The applicant claims that 'inulin-type fructans (ITF) of any DP are not hydrolysed nor absorbed in the human small intestine, and instead reach the large intestine essentially intact. When oligofructose reaches the human colon intact, the bifidobacteria initially ferment them as an energy source, while increasing in number, to short chain fatty acids (SCFA) and gasses. The microbial fermentation of oligofructose due to growing bifidobacteria numbers and other gut microbes will result in an increase in SCFA, microbial biomass in the stools, and stool wet weight, and thereby has been suggested to increase faecal bulk, the frequency of stools and softer consistency'.

## Wording of the health claim as proposed by the applicant

The applicant has proposed the following wording for the health claim: 'Fructose<sup>®</sup> chicory oligofructose contributes to regular bowel function by increasing stool frequency'. The applicant provided also three alternative wordings: 'Fructose<sup>®</sup> chicory oligofructose contributes to digestive/normal bowel function by increasing stool frequency', 'Fructose<sup>®</sup> chicory oligofructose maintains/improves regular bowel movements' and 'Fructose<sup>®</sup> chicory oligofructose contributes to/maintain bowel regularity'.

## Specific conditions of use as proposed by the applicant

According to the applicant, the target population for the intended health claim is the general healthy adult population. The daily consumption of 15 g of Fructose<sup>®</sup> chicory oligofructose, corresponding to 13.8 g chicory oligofructose dry matter is proposed.

## Data provided by the applicant

The health claim application on 'Fructose<sup>®</sup> contributes to regular bowel function by increasing stool frequency' pursuant to Article 13.5 of Regulation (EC) No 1924/2006, presented in a common and structured format as outlined in the Scientific and technical guidance for the preparation and presentation of applications for authorisation of health claims.

As outlined in the General guidance for stakeholders on health claim applications (EFSA NDA Panel, 2016a), it is the responsibility of the applicant to provide the totality of the available evidence.

## 2.2. Methodologies

The general approach of the NDA Panel for the evaluation of health claim applications is outlined in the EFSA general guidance for stakeholders on health claim applications (EFSA NDA Panel, 2016a).

The scientific requirements for health claims related to the immune system, the gastrointestinal tract and defence against pathogenic microorganisms are outlined in a specific EFSA guidance (EFSA NDA Panel, 2016b).

The application contains data claimed as confidential: Part 2. of the application on characterisation of the food product: Validation report AOAC 999.03, 2017, HPLC measurement of carbohydrates in FOS ingredients and food matrices, Validation of method for measuring oligofructose level for chicory Fructose<sup>®</sup> ingredients Report SA6D60 2007: Platje, T. and Muller, A. Inulin and Oligofructose Hydrolysis Model, Nouwens-Roest, M. Fructan analysis in several food applications with Fructose<sup>®</sup> oligofructose ingredients, Nouwens-Roest, M. Stability test – fructans from Fructose<sup>®</sup> oligofructose (powders & syrups) in spoonable yogurt. Part 5.2.1 of the application on unpublished human intervention studies: Calame (2017) report and Aspell et al. (2020) study report. The confidentiality decision was issued on 11 June 2021.

The application contains data claimed as proprietary: Calame (2017) statistical report and Aspell et al. (2020) study report.

## 3. Assessment

The approach used by the NDA Panel for the evaluation of health claims is explained in the General scientific guidance for stakeholders on health claim applications (EFSA NDA Panel, 2016a). In assessing each specific food/health relationship, which forms the basis of a health claim the NDA Panel considers the following key criteria:

- i) the food/constituent is defined and characterised;
- ii) the claimed effect is based on the essentiality of a nutrient; OR the claimed effect is defined and is a beneficial physiological effect for the target population and can be measured *in vivo* in humans;
- iii) a cause and effect relationship is established between the consumption of the food/constituent and the claimed effect (for the target group under the proposed conditions of use).

Each of these three criteria needs to be assessed by the NDA Panel with a favourable outcome for a claim to be substantiated. In addition, an unfavourable outcome of the assessment of criterion (i) and/or (ii) precludes the scientific assessment of criterion (iii).

### 3.1. Characterisation of the food/constituent

The food/constituent proposed by the applicant as the subject of the health claim is 'Fructose<sup>®</sup> chicory oligofructose'.

Fructose<sup>®</sup> is a mixture of fructose polymers (fructans) obtained by partial enzymatic hydrolysis of chicory inulin (*Cichorium intybus* L.). Fructose monomers are linked with  $\beta$ -(2-1) bonds that are not digested by human enzymes in the digestive tract. The chemical formula of fructans present in Fructose<sup>®</sup> is  $C_6H_{11}O_6(C_6H_{10}O_5)_nOH$ . Fructo-oligosaccharides (FOS) with a degree of polymerisation (DP) from 3 to 10 constitute 92.6–92.8% of Fructose<sup>®</sup> OFP by weight. The remaining fraction consists of sugars (glucose 0.4–0.5% and fructose 1.0–1.1%), fructose–fructose dimers (2.0–2.1%), glucose–fructose dimers (1.9–2%) and polysaccharides with DP > 10 (1.3–1.5%) (values based on the assessment of three batches of Fructose<sup>®</sup> OFP powder).

Fructose<sup>®</sup> is obtained from chicory inulin, extracted from chicory roots and purified. The partial hydrolysis of inulin to oligofructose is obtained by incubating inulin juice with an inulinase. Juice is concentrated by evaporation to a syrup or dried to oligofructose powder.

The composition and content of fructans in Fructose<sup>®</sup> are measured using validated methods (high-performance anion-exchange chromatography with pulsed amperometric detection (HPAEC-PAD) and high-performance liquid chromatography (HPLC)).

An overview of the manufacturing process, stability data and batch-to-batch variability were provided by the applicant.

The Panel considers that Fructose<sup>®</sup>, a mixture of fructans obtained from enzymatic hydrolysis of chicory inulin, which is the subject of the health claim, is sufficiently characterised.

### 3.2. Relevance of the claimed effect to human health

The claimed effect proposed by the applicant is 'contributes to regular bowel function by increasing stool frequency'. The proposed target population is 'the general healthy adult population'.

*Maintenance of normal defecation may be assessed by a number of outcome variables which could provide information about the function and eventually about the underlying mechanism of action, some of which may be interrelated (e.g. stool frequency, stool consistency, sensation of complete/incomplete evacuation, faecal bulk, transit time). It is considered a beneficial physiological effect provided it does not result in diarrhoea (EFSA NDA Panel, 2016b).*

The Panel considers that maintenance of normal defecation is a beneficial physiological effect provided that it does not result in diarrhoea.

### 3.3. Scientific substantiation of the claimed effect

The applicant performed literature search in Scopus database searching for studies published before August 2020. The following key words were used: fructan OR fos OR fructooligosaccharide OR fructo-oligosaccharide OR inulin OR "inulin-type fructan" OR oligofructose) AND "stool frequency" OR "frequency of stools" OR "bowel frequency" OR "bowel movement" OR constip\* OR "intestinal transit" OR "frequency of defecation" OR "defecation frequency" OR "bowel habit" OR "regularity" OR "fecal output" OR "fecal weight". The additional search was performed in Sensus database with the following keywords: (inulin\* OR neosugar\* OR fructan\* OR polyfruct\* OR (poly PRE/0 fruct\*) OR oligofruct\* OR (oligo PRE/0 fruct\*) OR inulo\* OR (fructose PRE/2 polymer\*) OR kestose\* OR neokestose\* OR isokestose\* OR oligofructan\* OR (fructo PRE/0 oligosaccharide\*) OR fructooligosaccharide\*) AND NOT (renal\* OR kidney\* OR perfus\* OR clearance OR vesic\* OR intracellu\* OR permeability OR radiolabel\* OR (brain PRE/0 barrier) OR LANGUAGE(japanese OR chinese OR russian OR korean))) AND RECENT (92). Reviews, studies on animals and publications not in English language were excluded.

The applicant identified two human intervention studies (Dahl et al., 2014 (published), Aspell et al., 2020 (unpublished study report)) as being pertinent to the claim. In addition, the applicant submitted an unpublished statistical analysis of the Dahl et al. (2014) study (Calame, 2017).

For the purpose of this opinion, only outcomes related to defecation will be discussed.

The study by Dahl et al. (2014) was a randomised, double-blind, parallel, placebo-controlled, two arm study which compared the effect of Fructose<sup>®</sup> (16.4 g/day in snack bars and yogurts) with placebo (snack bars and yogurts without Fructose<sup>®</sup> added) consumed for eight weeks on bowel function, gastrointestinal (GI) discomfort and energy intake. The applicant clarified that energy intake was the primary outcome of the study.

Healthy adults 18–50 years old were recruited for the study. The inclusion criteria were as follows: BMI between 23 and 30 kg/m<sup>2</sup>, usual fibre intake of less than 20 g/day, stable weight (changes not greater than 2.3 kg within the last 3 months) and habitual breakfast consumption. The main non-inclusion criteria included: postmenopausal status, high eating restraint (on the basis of the results of the Eating Inventory questionnaire), tobacco use, use of antibiotics within the two months prior to the study, diagnosed gastrointestinal disease other than gastro-oesophageal reflux, constipation or diverticular disease.

The participants were randomised in six blocks based on their sex and the average energy intake estimated from a 24-h diet survey. The randomisation list was generated by the statistician who was blinded to the treatment.

The power calculation was based on the primary outcome of the study i.e. energy intake. The expected difference in energy intake between groups was 120 kcal (500 kJ) (lower energy intake in the test group compared to the control group), with 80% power, alpha of 0.05, and 15% attrition rate. A correlation between results in blocks should achieve at least 0.4 ('fairly good blocking'). A sample size of 200 participants was calculated. Following a pre-planned interim analysis conducted when the first batch of participants had completed the study ( $n = 98$ ), the study was stopped for futility in the primary outcome. The results for the outcomes related to bowel function are reported for the 98 participants randomised. One snack bar and one yogurt were consumed daily. In the intervention group, snack bars and yogurts provided 8.4 g and 8.0 g (16.4 g/day total) Fructose<sup>®</sup>, respectively. The control group consumed snack bars and yogurts with no added Fructose<sup>®</sup>. During the first week of the intervention, only snack bars were provided to allow adaptation to increased fibre intakes. Intervention and control study foods were identical in appearance and taste. The personnel delivering the food items were blinded to the intervention.

Daily stool frequency and consistency was reported by the participants with the use of questionnaires sent electronically to the research centre. The questionnaires covered also the questions related to symptoms of abdominal discomfort (with a scale from 0 to 6), the amount of each study food consumed, and antibiotic use.

Daily stool frequency was analysed by averaging each week for each subject and, after log-transformation, a generalised linear mixed model was used to assess the effect of intervention (Fructose<sup>®</sup>, control), sex and week of the study (pre-baseline and intervention weeks 1–8). Subjects were included as random effect in the model. Mean differences in stool frequency by study group and sex were analysed using a two-way ANOVA with Holm–Šidák correction.

Out of the 98 subjects randomised (61 women, mean age  $24 \pm 1.3$  years, 50 subjects in the Fructose<sup>®</sup> group and 48 in the control group), 97 participants completed the study. One participant (in the Fructose<sup>®</sup> group) withdrew due to gastro-intestinal symptoms within first 3 days of the intervention. For seven participants (five in the control group and two in the Fructose<sup>®</sup> group), antibiotics were prescribed during the intervention period and their data were not included in the analysis from the first day of the antibiotic treatment. The participants reported consumption of 96% of the administered foods.

Intervention and control groups were different in relation to stool frequency at baseline. The number of defecations per week, mean values  $\pm$  SD, were  $7.3 \pm 3.9$  in the Fructose<sup>®</sup> group and  $9.5 \pm 4.6$  in the control group,  $p < 0.02$  ( $p < 0.006$  for the log-transformed counts). The Panel notes that the baseline difference between groups is beyond what could be expected to occur by chance and thus is indicative of a failure of the randomisation process in relation to this outcome. The Panel also notes that the randomisation strategy was set to balance the study groups for the primary outcome (i.e. energy intake).

The applicant submitted a re-analysis of the data in which baseline values for stool frequency were considered as co-variate (Calame, 2017, unpublished statistical report). This analysis shows a time-dependent increase in stool frequency associated with the intervention (i.e. Fructose<sup>®</sup>) as compared to placebo ( $p < 0.001$ ). The Panel notes, however, that this re-analysis also reports on several other factors significantly affecting stool frequency during the study, including age, sex, stool frequency at baseline, BMI and ethnicity.

The Panel considers that the analysis is unable to address the bias that is introduced into the study by likely randomisation failure in relation to this outcome (which was not the primary outcome of the study) and the confounding that this may cause. Therefore, the Panel considers that no conclusions can be drawn from this study for the scientific substantiation of the claim.



Aspell et al. (2020, unpublished study report and claimed as proprietary) carried out a randomised, double-blind, parallel, placebo-controlled, two arm study to investigate the effect of Fructose<sup>®</sup> on several GI outcomes.

Adults (18–65 years) with low stool frequency defined as 3–4 bowel movements per week and low intakes of dietary fibre (between 13 g and 22 g per day) were eligible. The main non-inclusion criteria were stool frequency lower than 3 per week, antibiotics used in the preceding 3 months and being vegetarians. The use of laxatives/stool softeners during the study was prohibited.

Stool frequency was the primary outcome of the study. Secondary outcomes were stool consistency, straining during defecation, GI discomfort and quality of life.

Defecation frequency and other GI outcomes were assessed daily with a GI e-diary (customised mobile application). The investigators monitored the application via a web-based portal. If participants did not complete their diary for three consecutive days, they received a text message or a phone call from a member of the team to discuss the compliance. The consistency of stools was evaluated using a validated Bristol Stool Form Scale (BSFS). The validated EPIC-Norfolk Food Frequency Questionnaire (FFQ) was completed twice (at the inclusion visit and at the end of the intervention) to assess habitual dietary fibre intake.

The study food products were taken for 8 weeks, after a 2-week run-in period. Fructose<sup>®</sup> (5 g, intervention) and dextrose (2.5 g, control) were provided in sachets and consumed three times daily. Both products were identical in appearance and taste, and isocaloric to each other. The personnel distributing the foods was blinded to the identity of the products. The Panel notes that the weight of the two products tested was different.

Randomisation was performed on 1:1 basis as block randomisation applying three factors: sex, stool frequency at baseline (below and above 3.5 defecations/week) and dietary fibre intake (13–15.9 g/day, 16–18.9 g/day, and 19–22 g/day).

Sample size calculations (as reported in the protocol of study) were based on the results of study by Dahl et al. (2014), considering an increase of 0.45 stools/week in the intervention group and of 0.15 stools/week in the control group. Using a power of 0.80, an  $\alpha$ -level of 0.05, and assuming a drop-out rate of 15%, the estimated overall sample size of the study was 74 participants. The applicant clarified that the power was also calculated for area under the curve (AUC) of the mean number of stools per week and for <sup>10</sup>log transformed stool frequencies that gave 'a broad range' of the power analysis. A total of 140 subjects were randomised, approximately two times the calculated sample size.

The outcomes assessed at baseline in the intervention and control groups were compared with the Mann–Whitney U-test or unpaired t-test depending on the distribution of the data. Generalised estimating equations (GEE) analysis was applied to analyse the treatment effect in time. The following confounders were integrated in the model: age, gender, BMI, the weekly stool frequency at baseline, amount of fibre regularly consumed and value of the respective parameter at baseline.

Four data sets were considered: intention-to-treat (ITT) (all randomised participants with at least one determination of a parameter afterwards) and per protocol (PP) (all randomised participants with complete data and at least 80% of the product consumed), both with and without outliers. Both absolute values and change values of all outcomes were analysed. For all endpoints related to defecation, data per day were summed per 2 weeks. Since many missing values were present, 2-week means were calculated from daily values for each individual. This resulted in five 2-week periods per person (baseline, 2, 4, 6 and 8 weeks).

A pre-planned interim analysis was performed by a statistician blinded to treatment allocation when 50% of participants had completed the study. Based on the results it was decided to continue the study with the pre-defined sample of 140 participants.

As explained by the applicant, 141 participants (70 in the Fructose<sup>®</sup> group and 71 in the control group, 15 men, mean age  $38 \pm 12$  years, mean BMI  $25.5 \pm 0.5$  kg/m<sup>2</sup>) were randomised and 138 were included in the ITT population. Three drop-outs (2 in the Fructose<sup>®</sup> group) were unrelated to the study products. No significant differences between the intervention and control groups were found at baseline in relation to all variables measured. The compliance, measured as the number of the returned sachets at the end of the intervention, was 98.6% for the Fructose<sup>®</sup> group and 96.6% for the control group.

An analysis that was described by the authors of the study as an ITT analysis included 138 subjects, 68 in the chicory Fructose<sup>®</sup> group and 70 in the placebo group. The number of defecations increased in both groups: in the Fructose<sup>®</sup> group from  $0.48 \pm 0.08$  (mean  $\pm$  SD) per day at baseline to  $0.76 \pm 0.29$  in week 8. In the control group it increased from  $0.48 \pm 0.07$  per day at baseline to

0.70 ± 0.25 in week 8. In the GEE analysis, the treatment per time interaction using absolute daily stool frequencies was statistically significant (more frequent stools in the Fructose<sup>®</sup> group,  $p < 0.03$ , 95% CI -0.017, -0.015). When the change in stool frequency was assessed, similar results were obtained (in the Fructose<sup>®</sup> group increase of  $0.28 \pm 0.29$  per day and in the control group  $0.22 \pm 0.26$  per day in week 8;  $p < 0.03$ , 95% CI -0.017, -0.012 in GEE analysis).

Stool consistency, as assessed with the BSFS, improved in both groups during the intervention (more soft stools): in the Fructose<sup>®</sup> group from  $2.62 \pm 0.93$  at baseline to  $3.27 \pm 1.03$  at week 8, in the control group from  $2.66 \pm 0.77$  at baseline to  $2.98 \pm 0.91$  at week 8. The treatment per time interaction using absolute stool consistency values was statistically significant (softer stools in the Fructose<sup>®</sup> group,  $p < 0.03$ , 95% CI -0.381, 0.023 in GEE analysis). The difference between the two groups in relation to the change in stool consistency was also statistically significant ( $p < 0.03$ , 95% CI -0.379, -0.027 in GEE analysis).

For the PP analyses including 132 subjects, 63 in the chicory Fructose<sup>®</sup> group and 69 in the placebo group, similar results were obtained. The consumption of Fructose<sup>®</sup> did not cause diarrhoea.

The Panel considers that this study shows an effect of Fructose<sup>®</sup> on the maintenance of normal defecation by increasing stool frequency and improving stool consistency (softer stools) when consumed daily at a dose of 15 g for 8 weeks.

### Mechanism of action proposed:

The Panel notes that inulin and inulin-type fructans are non-digestible carbohydrates which could exert an effect on stool frequency by stimulating bacterial growth in the gut and by increasing bacterial cell mass and faecal bulk (EFSA NDA Panel, 2015).

Oral ingestion of FOS results in increase of bifidobacteria count in the colonic lumen (Swanson et al., 2020). FOS in *in vitro* conditions caused an increase in number of bifidobacteria (Falony et al., 2006). An increase in SCFA concentration in the presence of FOS was reported in *in vitro* conditions (Falony et al., 2006; Stewart et al., 2008), in colon lumen in rodents (Lange et al., 2015), and in review papers (de Vuyst and Leroy, 2011; Swanson et al., 2020).

The Panel considers that there is a plausible mechanism by which Fructose<sup>®</sup> could contribute to the maintenance of normal defecation in humans.

### Weighing the evidence

In weighing the evidence, the Panel took into account that there is only one human intervention study that showed an effect of Fructose<sup>®</sup> on the maintenance of normal defecation by increasing stool frequency and improving stool consistency (softer stools) when consumed daily at a dose of 15 g for 8 weeks, and that there is a plausible mechanism by which Fructose<sup>®</sup> could exert the claimed effect. The consumption of Fructose<sup>®</sup> did not cause diarrhoea. The Panel also considers, however, that the results of the human study have not been replicated under the proposed conditions of use.

The Panel concludes that the evidence provided is insufficient to establish a cause and effect relationship between the consumption of Fructose<sup>®</sup>, a mixture of fructans obtained from enzymatic hydrolysis of chicory inulin, and maintenance of normal defecation under the proposed conditions of use.

### Conclusions

On the basis of the data presented, the Panel concludes that:

- The food/constituent, Fructose<sup>®</sup>, a mixture of fructans obtained from enzymatic hydrolysis of chicory inulin, which is the subject of the health claim, is sufficiently characterised.
- The claimed effect proposed by the applicant is 'maintenance of normal defecation by increasing stool frequency'. The target population proposed by the applicant is 'the general healthy adult population'. Maintenance of normal defecation is a beneficial physiological effect provided that it does not result in diarrhoea.
- The evidence provided is insufficient to establish a cause and effect relationship between the consumption of Fructose<sup>®</sup> and maintenance of normal defecation under the proposed conditions of use.

## Documentation as provided to EFSA

Health claim application on 'Fructose<sup>®</sup>' and 'maintenance of normal defecation by increasing stool frequency' pursuant to Article 13(5) of Regulation (EC) No 1924/2006 (Claim serial No: 0500\_NL). Submitted by: Sensus B.V. (Royal Cosun), Oostelijke Havendijk 15, 4707 RA, Roosendaal, the Netherlands.

## Steps taken by EFSA

- 1) This application was received by EFSA on 29/09/2020.
- 2) The scope of the application was proposed to fall under a health claim based on newly developed scientific evidence.
- 3) The scientific evaluation procedure started on 19/02/2021.
- 4) On 6/03/2021, the Working Group on Claims of the NDA Panel agreed on a list of questions for the applicant to provide additional information to accompany the application. The scientific evaluation was suspended on 24/03/2021 and was restarted on 8/04/2021, in compliance with Article 18(3) of Regulation (EC) No 1924/2006.
- 5) During its meeting on 6/07/2021, the NDA Panel, having evaluated the data, adopted an opinion on the scientific substantiation of a health claim related to the consumption of Fructose<sup>®</sup> and maintenance of normal defecation.

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## Abbreviations

ANOVA	analysis of variance
AOAC	Association of Official Agricultural Chemists
AUC	area under the curve
BMI	Body Mass Index

BSFS	Bristol Stool Form Scale
CI	confidence interval
DP	degree of polymerisation
EPIC	European Prospective Investigation into Cancer and Nutrition
FFQ	Food Frequency Questionnaire
FOS	fructo-oligosaccharides
GEE	generalised estimating equations
GI	gastrointestinal
HPAEC-PAD	high-performance anion-exchange chromatography with pulsed amperometric detection
HPLC	high-performance liquid chromatography
ITF	inulin-type fructans
ITT	intention-to-treat
NDA Panel	Panel on Nutrition, Novel Foods and Food Allergens
PP	per protocol
SCFA	short-chain fatty acid
SD	standard deviation