Canadian health professionals' understanding of sugar's functional roles in foods

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June 9, 2016



Canadian Foundation for Dietetic Research



DIETITIANS OF CANADA NATIONAL CONFERENC June 8-11, 2016 – Winnipeg

Canadian Sugar Institute Nutrition Information Service

- Inform and educate Canadians about sugars and healthy eating and advocate for science-based nutrition policies
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How does the human body process sugars consumed in the dial? What are the relations between sugars intake and obesity, blood glucose response, appetite regulation, addid-

Background: Media Perception

 The presence of sugar (sucrose) in food products has garnered both media attention and calls from health groups for reformulation to reduce the added sugar content of foods.

Sugar Is Just Empty Calories—but That's the Whole Problem

Sugar makes you fat - and it may be killing you

HAMILTON SPECTATOR



As Canadians we are eating too much 'added sugar.' Sugar gives us energy but not much else. Consuming too much sugar puts us at risk for <u>heart disease</u>, <u>stroke</u>, <u>obesity</u>, <u>diabetes</u>, high blood <u>cholesterol</u>, <u>cancer</u> and of course <u>cavities</u>.

> THE CANADIAN PRESS ** Eating Sugar Causes Massive Health Problems, Says WHO

Background: Functional Properties of Sugar in Foods

• However, sugar contributes important sensory, microbial, chemical and structural properties to foods, in addition to providing sweetness.

	Sensory	SweetnessFlavour perceptionFlavour enhancement
	Microbial	PreservationFermentation
	Chemical	CaramelizationMaillard browning
	Physical	 Crystallization Boiling point (temperature) increases Freezing point depression Texture and Appearance





The objective of this study was to:

- Assess health professionals' knowledge regarding the functional roles of sugar in foods; and
- Identify knowledge gaps.





- Questionnaires voluntarily completed by health professionals at two Dietitians of Canada conferences and the International Diabetes Federation conference in 2015
- A total of **377** health professionals completed surveys
- Questionnaires included five questions on topics pertaining to functional roles of sugar in different types of foods
- Microsoft Office Excel 2013 was used to conduct data analysis.



Results: Participants' Area of Practice



Results: Roles of Sugar in Baked Goods

Q1. In baked foods, which of the following features is/are linked to the use of sugar (sucrose)? <u>Check all that apply</u>.

- ✓ Flavour
- ✓ Longer shelf life
- \mathbf{v} Proper rise of the dough
- ✓ Yellow-brown colour



Results: Lesser Known Roles of Sugar in Baked Goods

DID YOU KNOW?

Sugar is very important in bread making, working with yeast to make bread rise.

For more information, visit sugar.ca

(in)



Sugar acts as an important tenderizing agent and is responsible for the pleasant golden-brown colour of baked products.

For more information, visit sugar.ca

(in)

CANADIAN SUGAR

Results: Roles of Sugar in Tomato-Based Sauces

2. Sugar is added to tomato-based sauces (e.g. BBQ sauce) to

- v Balance the natural acidity of tomatoes
- v Heighten the tomato flavour
- Improve consistency
- Contribute to the browning process

_. Check all that apply.





Results: Roles of Sugar in Breakfast Cereals

3. In ready-to-eat breakfast cereals, which of the following features is/are linked to the use of sugar (sucrose)? <u>Check all that apply</u>.

- Flavour
- v Improved surface porosity
- Increased crispness
- ✓ Longer shelf life





Results: Sugar Replacements for Texture

4. In sugar-free products, the consistency/texture is usually maintained by replacing sugar with which of the following ingredients? <u>Check all that apply</u>.

- ✓ Starches
- ✓ Gelatin

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Replacing Sugar Functionality

 To reduce sugar but still maintain a product's consistency and texture, other Caloric ingredients (e.g. starches, polydextrose, gelatin) are often added, which may not reduce the total energy content of the foods.

Function	Replacement ingredients
Sweetness	High intensity sweeteners, polyols (xylitol)
Mouthfeel/texture	Hydrocolloids (gums, starch, gelatin), polyols, sugars
Flavour	Flavours (additives)
Preservation	Preservatives (additives)
Colour	Colours (additives)
Structure	Bulking agents (starches, maltodextrin), polyols, fibres (inulin)

Results: Sugars Claims Misconception

5. Please indicate how much you agree with the following statement:

Products with the claim "*Reduced In Sugar*" are lower in Calories compared to the products not "*Reduced In Sugar*".



Food Drug Regulation B.01.513:

<u>Reduced in Sugar Claim</u>: The food is modified to contain at least 25% less sugars, totalling at least 5 g less than the standard product per reference amount, or per 100 grams

"Reduced in Sugar" =/= "Reduced in Calories"

Original Vanilla Ice Cream

Ingredients:

Cream, Modified Milk Ingredients, Sugar, Glucose, Mono and Diglycerides, Locust Bean Gum, Cellulose Gum, Guar Gum, Carrageenan, Dextrose, Natural Flavour.

Nutrition Facts Serving Size = Per 1/2 Cup (125mL)				
Amount	% Daily Value			
Calorie 120				
Fat 6g	9%			
Saturated 3.5g + Trans 0.2g	18%			
Cholesterol 20mg				
Sodium 40mg	2%			
Carbohydrate 17g	6%			
Fibre 1g	4%			
Sugars 11g				
Protein 1g				
Vitamin A	6%			
Vitamin C	0%			
Calcium	4%			
Iron	0%			

Nutrition Facts Serving Size = Per 1/2 Cup (125mL)				
Amount	% Daily Value			
Calories 120				
Fat 7g	11%			
Saturated 4g + Trans 0.3g	22%			
Cholesterol 20mg				
Sodium 85mg	4%			
Carbohydrate 14g	5%			
Fibre 0g	0%			
Sugars 7g				
Sugars Alcohol 8	g			
Protein 3g				
Vitamin A 49				
Vitamin C	0%			
Calcium	6%			
Iron	0%			

No Sugar Added Ice Cream

Ingredients:

Modified Milk Ingredients, Cream, Maltitol Syrup, Skim Milk Powder, Mono and Diglycerides, Guar Gum, Locust Bean Gum, Cellulose Gum, Carrageenan, Natural Flavour, Sucralose, Lactase.

Sweetened with Maltitol and Sucralose.

Conclusions

- This survey revealed knowledge gaps in health professionals' understanding of sugar's functional roles in foods.
 - Flavour was the most frequently known function for each category.
 - While almost half (40%) of respondents recognized products with the claim "reduced in sugar" are not always lower in Calories compared to products not "reduced in sugar", very few (3%) could correctly identify the three major Caloric replacement ingredients.



For more information, visit sugar.ca

Conclusions

 2016 CSI projects have focused on developing innovative and interactive resources to help address knowledge gaps and support health professionals communicate science-based nutrition information related to sugars to the media and the public.

WEBINAR – BEYOND SWEETNESS: THE FUNCTIONAL ROLES OF SUGAR IN FOODS AND THE CHALLENGES IN REPLACING/REDUCING IT

SUGAR BEYOND SWEETNESS

A Workshop and Interactive Food Demonstration with Chef Claire Tansey

April 18, 2016

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Segar (surces) is best incern to provide seventness to foods, and as such is one of the main ingradient used in dessets, contections, and seventned beverages. However, sugar is a versatile ingradient and contributes many other indirical programs to load products. As a result, it can be a challenge to reduce or remove sugar in necipies because there is no single universal sugar replace that can be used in every acceleration.

Sugar in Foods and the Challenges

Beyond Sweetness: The Functional Roles of

in Replacing/Reducing It

This resource provides a comprehensive review of sugar's multi-functionality, sugar substitutes commonly used in foods and misconceptions in relation to sugar replacement.

Table 1: Functional properties of sugar in foods beyond sweetnes

 Table 1. Functional properties of sugar in roots beyond succession				
Function	Explanation and Examples			
Preservation	Sugar lowers water activity (the availability of water to support microbial growth), reducing microbial growth potential and increasing room temperature shell-life			
Fermentation	 Sugar acts as a growth substrate for bacteria and yeasts in fermented foods. Gas (i.e. carbon diaxide) is produced from fermentation, making bread rise and giving it a light crumb structure 			
Browning (Caramelization and Maillard Reaction)	Coramelization: Sugars are heated in the obsence of proteins and degraded, producing a dark brown colour and coramel flavours in foods such as pearul brittle, coramels, toffees, molasses			

WHAT TYPES OF FOODS IS SUGAR ADDED TO?



WHAT FUNCTIONS DOES SUGAR PLAY IN FOODS?

Sugar not only plays an important role in making foods taste better, it also has many functional roles in food preservation, cooking and baking. For example, sugar inhibits the growth of microorganisms in jams and jellies, thickens sauces, balances natural acidity of tomato or vinegar-based products, and holds moisture to prevent stateness in baked goods, All of these functions cannot easily be roplaced with other ingredients.

Questions?





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