Straight Talk about Low Calorie Sweeteners for People with Diabetes

Diabetes Sisters
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Disclosures*

- Consultant, Heartland Food Products Group, manufacturer of SPLENDA® Sweetener Products

*Related to this presentation
LCS: Rationale for Use

- Replace added sugars

- Offer sweet, good tasting lower calorie foods, beverages, sweeteners to satisfy innate desire for sweetness
Added sugars: 270 kcals/day (13% total calories/day) ¹

Dietary Guidelines: Reduce Added Sugars

- Dietary Guidelines 2015-2020: reduce/limit added sugars\(^1,2\)
  - Growing evidence health concerns:\(^1\)
    - Strong: Risk of overweight/obesity, type 2 diabetes (adults)
    - Moderate: high blood pressure, stroke, heart disease, high triglycerides

- DG Advisory Committee recommendations (2/15):\(^1\)
  - Reduce added sugars < 10% of total calories\(^1\)
  - Revise Nutrition Facts label:
    - Include added sugars (total g), % Daily Value\(^2\)

Final Regulations for NEW Nutrition Facts Label¹,²

1. Changes to the Nutrition Facts Label: (final regulations, published 5/20/16)
   http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm385663.htm


When can you expect to see the new label? 2018 - 2019
Topics

- Safety regulations, review
- Benefits: weight control, diet quality
- Practical advice for use
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Approval of Low Calorie Sweeteners by U.S. FDA

- U.S. FDA regulates, approves ingredients as food additive or Generally Recognized As Safe (GRAS)\(^1,2\)
  - Follows established rigorous protocols for safety/safety review\(^2\)
  - Standard of safety: “...reasonable certainty of no harm...”
  - Approved for entire population

2. Guidance for industry and other stakeholders toxicological principles for the safety assessment of food ingredients see http://www.fda.gov/food/guidancecomplianceregulatoryinformation/guidancedocuments/foodingredientsandpackaging/redbook/default.htm
## Major LCS in Use in U.S. Today\(^1\)

<table>
<thead>
<tr>
<th>NNS Name</th>
<th>Initial Approval/Use+</th>
<th>FDA Approval Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saccharin</td>
<td>U.S. use in early 1900’s</td>
<td>GRAS(^2)</td>
</tr>
<tr>
<td>Aspartame</td>
<td>1981</td>
<td>Food additive</td>
</tr>
<tr>
<td>Acesulfame-K</td>
<td>1988</td>
<td>Food additive</td>
</tr>
<tr>
<td>Sucralose</td>
<td>1998</td>
<td>Food additive</td>
</tr>
<tr>
<td>Neotame</td>
<td>2002</td>
<td>Food additive</td>
</tr>
<tr>
<td>Stevia extracts</td>
<td>2008 - 2015</td>
<td>GRAS(^2,3)</td>
</tr>
<tr>
<td>Monkfruit extract</td>
<td>2009</td>
<td>GRAS (^2,4,5)</td>
</tr>
<tr>
<td>(luo han guo)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allulose (psicose)</td>
<td>2015</td>
<td>GRAS(^6)</td>
</tr>
</tbody>
</table>

+ Listed in chronological order of availability in U.S. marketplace.

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2. GRAS notices are submitted to FDA under its proposed rule of April 17, 1997, published in the Federal Register at 62 FR 18938-18964.
3. What refined Stevia preparations have been evaluated by FDA to be used as a sweetener? http://www.fda.gov/AboutFDA/Transparency/Basics/ucm214865.htm

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**FDA has found all of these LCS to be safe for their intended and permitted uses.**
FDA’s Definition of “Natural”, Changes?

“From a food science perspective, it is difficult to define a food product that is 'natural' because the food has probably been processed and is no longer the product of the earth. That said, FDA has not developed a definition for use of the term natural or its derivatives. However, the agency has not objected to the use of the term if the food does not contain added color, artificial flavors, or synthetic substances.¹”

Update 5/9/16: “Because of the changing landscape of food ingredients and production, and in direct response to consumers who have requested that the FDA explore the use of the term “natural,” the agency asked the public [11/15] to provide information and comments on the use of this term in the labeling of human food products.”²

1. What is the meaning of ‘Natural’ on the label of food: http://www.fda.gov/aboutfda/transparency/basics/ucm214868.htm
Organizations’ Statements Support Safety

- American Cancer Society¹
- Nat’l Cancer Institute²
- American Diabetes Association/American Heart Association³
- Academy Nutrition & Dietetics⁴
- American Diabetes Association⁵
- American Academy of Pediatrics⁶

3. Nonnutritive Sweeteners: Current Use and Health Perspectives. Scientific statement from American Diabetes Association (ADA) in Diabetes Care: http://care.diabetesjournals.org/content/early/2012/07/06/dc12-9002.full.pdf+html) and American Heart Association in Circulation: http://circ.ahajournals.org/content/early/2012/07/09/CIR.0b013e31825c42ee. (Published simultaneously)
Use of nonnutritive sweeteners (NNSs) has the potential to reduce overall calorie and carbohydrate intake if substituted for caloric sweeteners without compensation by intake of additional calories from other sources.

Safety: statement refers to the reviews and approvals by FDA.
Glycemic effect: statement concludes research supports that NNS [LCS] do not produce a glycemic effect unless other calorie containing ingredients are in the product.

Please Don’t Eat the Media Headlines*

Which studies do or don’t YOU hear about?

*Slide title adopted from David Katz, MD, MPH, Director of Yale University’s Yale-Griffin Prevention Research Center
Don’t Eat the Media Headlines: Read, Reflect, Rely

- **Read...** Original research, go beyond press releases, spin and media headlines
- **Reflect...** On new research. Consider within existing body of evidence, government regulatory review, association recommendations and position papers
- **Rely...** On the vast body of scientific research, not just one new study
Topics

- Safety regulations, review
- Benefits: weight control, diet quality
- Practical advice for use
Summary: Randomized control studies done in humans consistently show that simple behavior changes made to control weight can overcome any proposed mechanism that might promote an increase in calories and weight gain.

LCS for Successful Weight Control: NWCR

- National Weight Control Registry: largest and longest study observing the experiences of successful wt losers\(^1\)
  - Entry: >30 lbs and kept off >1 yr

- Random sample (N=434) NWCR participants
  - Achieved mean wt loss: 34.2 ± 18.5 kg maintained for 7.8 ± 5.2 yrs
  - Responded to online survey about consumption of low/no calorie beverages

Results:

53% regularly consume low- and no-calorie sweetened beverages daily

78% of low- and no-calorie sweetened beverage drinkers say diet beverages help them control total calorie intake

Top 5 reasons:

1. taste (54%)
2. thirst (40%)
3. part of routine (27%)
4. reduce calories (22%)
5. go with meals (21%)
LCS and Diet Quality/Healthy Eating

- Drewnowski\textsuperscript{1}: 5 cycles NHANES data (1999-2008), diet quality assessed\textsuperscript{*}
  - LCS consumers ate more vegetables, whole grains and low-fat dairy

- Piernas\textsuperscript{2}: Secondary analysis of CHOICE, 3 groups (control, water and diet beverage), 6 mos
  - Both study groups (diet beverage, water) reduced total energy, carbohydrates, total sugar, added sugars and other calorie containing nutrients (protein, fat)
  - DB: > reduction of desserts compared to water drinkers

- Gibson\textsuperscript{3}: Adults in UK National Diet and Nutrition Survey, 4 groups: SSB, LCS-B, non-consumers of soft drinks (NC) and consumers BB
  - LCS-B and NC consumed less calories and sugars than consumers of SSB or BB
  - NC and LCS-B consumers had higher quality diets compared to SSB and BB consumers

\textsuperscript{*}HEI/Healthy Eating Index was developed by USDA to measure compliance with U.S. dietary recommendations and guidelines.

\textsuperscript{**}Solid Fats, Alcoholic Beverages and Added Sugars.

Topics

- Trends in use
- Safety regulations, review
- Efficacy: metabolic and weight control, diet quality
- Practical advice for use
LCS: Not a Magic Bullet to Achieve Diabetes/Health Goals in the Face of Overeating and/or Unhealthy Eating
LCS: A Tool in Your Toolbox to Ease, Improve Adherence, Potentially Achieve Your Nutrition, Diabetes Goals
LCS Use within Healthy Eating Plan\textsuperscript{1,2,3}

“Think Before You Drink”

- Reduce added sugars from sugar-sweetened beverages\(^1\) (47% of added sugars from beverages\(^2\))
  - Water is the preferred beverage choice\(^1\)
  - Drink sparkling water, flavored seltzer, club soda
    - Flavor water/seltzer with juice, lemon, lime, vegetables, dry powder mix without sugar
  - Choose diet soda over regular soda
  - Select other zero calorie beverages made with LCS
  - Sweeten hot or cold drinks with preferred LCS
  - Make your own ice tea, fruit punch, drinks with dry powder mix without sugar with preferred LCS

Reduce Added Sugars, Satisfy Desire for Sweet Taste/Sweets

- Sugar-free means added sugars free, not calorie-free
- Review “natural” term
  - Clarify agave, honey contain calories, raise BG
- Product categories:
  - Diet soda/beverages = 0 calories
  - Tabletop sweeteners = negligible calories*
  - Sugar-free foods/beverages with calorie-containing ingredients**
- Learn to cook and bake with LCS
- How to replace LCS, save calories, carbohydrate and NOT compensate (replace calories) from other foods

*Calories from bulking ingredients dextrin, maltodextrin; ADA define free food <20 cal/svg
**Glycemic effect: statement concludes research supports that NNS [LCS] do not produce a glycemic effect unless other calorie containing ingredients are in the product.
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Your Questions??

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