FUNCTIONAL PROPERTIES AND APPLICATIONS OF NATURAL SWEETENERS

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FUNCTIONS OF SWEETENERS

- Taste
- Texture
  - Humectant (Moisture Holding)
  - Crystal control
  - Binding
  - Freeze/thaw stability
- Substrate for fermentation
  - Yogurt
  - Alcoholic beverages
  - Baked goods
- Browning reactions
- Crystal control
  - Confectionary
  - Frozen desserts
TERMS

- Glycemic Index
- Glycemic Load
- Dextrose Equivalent (DE)
- Mono saccharides
- Disaccharides
- Oligosaccharides
- Maltodextrins
- Starch
ALTERNATIVE NATURAL SWEETENERS—WHY?

- Aversions to High Fructose Corn Syrup
- Natural or natural-sounding sweeteners
- Paleo
  - Honey
  - Maple Syrup
- Non GMO/Organic
- Ingredient Declaration
ALTERNATIVE NATURAL SWEETENERS

- Brown Rice Syrup
- Tapioca (Cassava Syrup)
- Agave syrup
- Maple Syrup
- Honey
- Yacon Syrup
- Others
ASPECTS OF PRODUCT DEVELOPMENT

- Sensory characteristics
- NUTRITION
- Perception
- Behaviors
- Role of food in lifestyles
IMPORTANCE OF SATIETY IN FOOD CHOICE

Satiation is the signalling of the end of the meal
Satiety is how long you can go between meals.

• Fiber
• Protein

Chambers, McCirkerd and Yeomans (2015)
TRIGGER—BEHAVIOR --- REWARD PATHWAY
HONEY

• Very popular—goes in and out of trends
  • Paleo
  • Not vegan since from bees
  • Good way to differentiate
  • Concern on adulteration, especially from China

• Sugar profile
  • Fructose—approx. 38%
  • Glucose—approx. 32%
  • Mix of other sugars

• Typically has a characteristic flavor depending on type

• Types
  • Raw
  • Raw and unfiltered (still has pollen)
  • filtered
MAPLE SYRUP

• Vegan
• Several types (recently changed—no grade B anymore)
  • Grade A golden
  • Grade A amber
  • Grade A dark
  • Grade A dark very robust taste
  • Processing grade
• Relatively expensive compared to other sweeteners
• Low in fructose and glucose; mostly sucrose
AGAVE SYRUP

- From Blue agave plant
- Available in raw, light, dark
- Cleaner taste
- Sugar profile
  - 70% fructose
  - 25% glucose
- Makes it lower glycemic but very high in fructose
BROWN RICE SYRUP (BRS)

- Comes from brown rice
- Several types based on the starch conversion
- Different colors
- Has a characteristic flavor
## BRS TYPES AND DEXTROSE EQUIVALENTS (DE)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Low Conversion</th>
<th>High Maltose</th>
<th>Med Conversion</th>
<th>Med Conversion</th>
<th>High Conversion</th>
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<tr>
<td>Glucose</td>
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<td>19</td>
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<td>Maltose</td>
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<td>34</td>
<td>13</td>
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<td>Viscosity (cp)</td>
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<td>125</td>
<td>100</td>
<td>100</td>
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</tbody>
</table>
TAPIOCA SYRUP

- From cassava root
- Clean flavor and color
- Available in 27 to 95 DE
- Can be used for many applications
YACON SYRUP

• Relatively new
• Sugar profile
  • 50% Fructo-oligosaccharides
  • 35% fructose
INULIN SYRUPS

- Less sweet
- Comes from high inulin roots
  - Chicory
  - Tapioca (cassava)
- Can work to reduce sweetness in food bars and other products
OTHERS

• Date syrups
• Pomegranate syrups
• Balsamic syrups
• Sweet potato syrup
• Sorghum syrups
PRODUCT DEVELOPMENT TIPS

- Use your suppliers’ information regarding applications
- Account for moisture content and loss
- MODERATION in use where applicable
- Know your consumer
- Realize that consumers will do their own research via the internet and will come to their own conclusions
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