

# 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

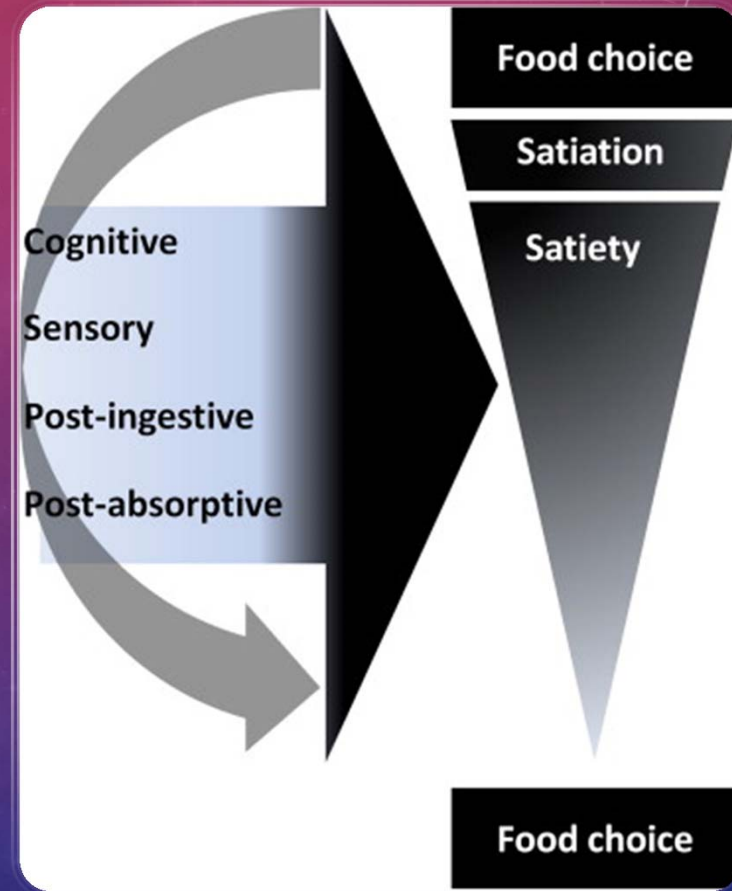
# IMPORTANCE OF SATIETY IN FOOD CHOICE

Satiaton 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)

Characteristics	Low Conversion	High Maltose	Med Conversion	Med Conversion	High Conversion
Glucose	5	4	19	29	41
Maltose	11	34	13	25	17
Total	16	38	32	54	58
Other sugars	60	38	44	22	17
DE	26	42	43	60	70
Viscosity (cp)	150	125	125	100	100

# 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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