Crystallization of Sucrose in Candy-Making Notetaker

Name _____ Food Science

Review of Sucrose:

- Common table sugar = compound of _____ + _____
- One of the most abundant pure organic compounds on earth
- Generally extracted for consumption from _____ or _____

How does Sugar Crystallize?

Sucrose starts out with a _____ structure

****Five factors affect crystal formation:**

1. Type of _____
   - Most often _____
   - Invert sugar (_____ or _____)
2. Use of interfering agents
3. Agitation of sugar syrup
4. Cooling of syrup
5. Ripening of finished product

****Types of Sugar**

Sucrose is the _____ in virtually all candy

- Invert sugar can also be used (naturally found in _____ and _____)

Candy Making

- Begin by dissolving _____ in _____, creating a _____

- The solution is then brought to a boil to _____ the water & _____ the solution.
  - Solution is now _____:
    - contains more sucrose molecules than can remain in the solution
  - Excess sucrose _____ spontaneously or around any foreign substance in the solution (such as a particle of dust).

Is crystallization a good thing? Dependent on the type of candy…

1. **Crystalline Candies:**
   - Require the formation of sucrose
   - Pure crystal candies (_____ candy) **OR** Candies that require _____crystals
   - Ex. _____
   - Other types of candies may begin with a _____ (sucrose and water solution):
2. **Non-Crystalline Candies**:
   - Sucrose crystals must be _____
     - Would produce a _____ texture in the candy and interfere with its _____
     - Sucrose must be stopped from crystallizing as the syrup is made.
   - Ex: _____

How Do Candy Makers Stop the Sucrose from Crystallizing?

In order to prevent the excess sucrose from recrystallizing **when the solution becomes supersaturated**, candy makers _____...

****INTERFERING AGENTS**

- Substances that can _____ crystal growth
- Will _____ to the sucrose molecules, keeping them from binding to each other.

Sugars

- **Most commonly used: _____**
  - High in_____
  - Produce _____ sugar crystals

Fats (_____):

- _____ sugar crystals
- Results in _____
- Also give many candies distinct _____

Acids

- _____ the sucrose in a sugar solution
- Results in _____ levels of _____
- These molecules do _____ crystallize in the same way sucrose does and does not produce sucrose's grainy texture.
- Some acids include: _____

Proteins

- _____ sugar crystals
- Egg _____
- Gelatin: Found in _____

Other Factors Affecting Crystallization

TEMPERATURE

Candy industry revolves around understanding the _____ of sugar to water at given temperatures; related to both & cooling

****AGITATION**

_____ of a candy solution

When **HOT:**

Slight or occasional stirring _____

- MOST FUDGE RECIPES:
  - Let cool until _____F
  - Beat vigorously until _____
  - _____ large crystals from forming large clusters (grainy texture)

****COOLING**

- Critical to crystal formation and should _____
- Stirring too early can cause crystals to _____
- Crystals formed slowly= _____texture
  Rapid crystallization= _____ texture
- Fondants/taffies often cooled on _____ (results in fast, even cooling)

****RIPENING**

- Allowing the candy to sit to form a _____
- Fondant: Requires ripening
- Wrapped securely _____
- Smoother, moister fondant _____more easily