Standard Laboratory Operating Procedure #1102
Ice Cream in a Bag

Laboratory: Biotechnology
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Location: Lab
Last Revision: 6/30/15

General: Is ice cream a complete food? Does it contain macromolecules that our cells need? What are the most common types of milk available globally? Which type of milk is a good alternative for cultures that do not have proper refrigeration?

Safety: safety glasses

Materials:
- ½ cup of Milk Types (Soy, Goat, Bovine, etc.)
- ½ teaspoon Vanilla
- 1 tablespoon Sugar
- Gallon Size Zip-loc bags

- 4 cups Ice
- 4 tablespoons Salt
- Quart Size Zip-loc bags
- Temperature probe

Procedure:
1. Pour the ______mL of milk sample into a quart size bag, using temperature probe to measure the initial temperature of the milk sample and record in data table.
2. Add_______mL of vanilla, and _____g of sugar in the quart size bag, with the milk sample.
3. Seal bag, squeezing out as much air as possible.
4. Pour _______mL of ice into the gallon size bag and then add ______g of salt on top of the ice.
5. Place the sealed quart size bag containing the milk solution in the gallon size bag containing the ice and salt mixture.
6. Seal, squeezing out as much air as possible.
7. Shake the gallon bag until milk solution in the quart size bag is frozen, about 5-10 minutes.
8. Use a temperature probe to measure the final temperature of the frozen milk sample and record in data table.
9. Use the following equation to calculate the freezing point depression:

   \[
   \text{Final Temperature} - \text{Initial Temperature} = \Delta T_f \text{ (change in freezing point)}
   \]

10. Repeat steps 1-9 with the other milk samples assigned per instructor.