

The Chemistry of Root Beer Floats

Introduction

The creation of the root beer float by Robert M. Green in Philadelphia PA, in 1874; became a worldwide craze and sensation in soda shops everywhere. This unique combination of a fountain drink with the ever popular dish of ice cream became so riveting that it is why i am here today. Root beer floats became an icon to those that were tired of following in the status quo of the norms of society. This drink had no boundaries of what was right or could be done! Not only were these tasty drinks made with root beer but as well as many other assortments of fountain drinks that would suit the mood, or taste someone preferred. I chose the root beer float to do my Chemistry of because i am addicted to ice cream and one of my favorite sodas is root beer, and then with those two together it makes them very delectable and irresistible combo. My life per say isnt effected to the extent that it'll alter my existence in the future, but as a way for me to enjoy and cherish two of my favorite foods at once. Root beer floats are a great ice breaker in a situation with friends, or even just a satisfying drink on a hot summer's day. I encourage all to try the root beer float, and its fellow perpetrators of flavors and designs. A few of which may be the Boston Cooler, made with Ginger Ale. Snow White, which is a concoction of either 7up or Sprite just determines on personal preference. Then there's the Purple Cow which is made with grape soda, and then lastly there's the Black Cow or Brown Cow which is made with cola or pepsi instead. The possibilities are endless and can go as far as your imagination and taste buds will allow, so what are you waiting for lets get a scooping and pouring.

Composition of ...

The composition of the root beer float is broken down into two major sections, one of which being the soda itself and then the other is the ice cream that accompanies the root beer or other fountain drink that's desired. To start out though i'll begin by explaining the many different features to the composition of ice cream. Ice cream is made with greater than 10% of it being milk fat, 9 -12% being serum solids which are non- fats like proteins, caseins and whey, and carbohydrates of lactose that are commonly found in milk. 12-16% of ice cream is filled with the sweeteners like sucrose, an organic compound most often referred to as table sugar, and then there's glucose, a naturally occurring sugar in our bodies, and finally there's corn syrup . The main bulk 55- 64% of the ingredients that make up ice cream is water. About .2-.5% are stabilisers which help preserve and keep the structure of the ice cream, and then there's emulsifiers which is another additive that helps in the process of dispersing liquids amongst a substance. Ice cream isn't typically labeled homogeneous , even though with all its

mixtures of water, ice, air, sugar, milk fat, and milk proteins. Root beer has many different ways to be made, one that mainly involves chemistry is the art of fermentation. This fountain drink is primarily made up of water, sugars, flavorings, color dyeing products, and carbon dioxide which would give it its carbonation. It also consists of sodium Benzoate, which is a preservative, and as well as quillaia extract. In a 12 full ounce can of root beer there is approximately 80 mg of sodium, 45 g of sugar, and total carbohydrates is around 47g. Ice cream can pretty much be made anywhere including your house, or even a lab if quite necessary, though the necessities needed are a way to freeze the ice cream if liquid nitrogen is not available. Root beer is another product that you can make from home, but as well as in a brewery.

Main Chemicals, Compounds, Components

Ice Cream: Sucrose= $C_{12}H_{22}O_{11}$ this is most commonly referred to as table sugar and commonly used in corn syrups, it's a refined sugar.

Glucose= $C_6H_{12}O_6$ a sugar our body produces naturally, helps stimulate and determine insulin levels

Water= H_2O

Salt= $NaCl$

Root Beer: Carbonated Water= H_2CO_3 split this up and it's Carbon dioxide (CO_2) and water (H_2O)

Sucrose= $C_{12}H_{22}O_{11}$

Sodium Benzoate= $NaC_6H_5CO_2$ is a preservative that is a salt that exists once dissolved in water

Chemistry's Role

In the creation of ice cream there are many different ways that chemistry can be used to influence the process. One version is of that they use liquid nitrogen to be one way to freeze and harden the ice cream; one result from this version is the most famous brand "Dippin Dots." Also when the freezing point is reached for water that is another way chemistry is used as well as the mixing and dissolving of different ingredients and elements to create the harden frozen we call ice cream. As I mentioned earlier root beer can be taken through the process of fermentation that usually takes place in breweries, or also in factories where they add preservatives and processed sugars.

Background Research

Ice cream is a colloid which is another type of emulsion, this means that there's a combination of two substances that don't normally mix together. The air in ice cream can be considered to be a foam, though there are molecules of fat clumped together to the water sugar and ice

mixture that create those air bubbles. Ice cream can be made in at the large manufacturing level or as well as at your home or business. Root beer can be made either at your house, though most the recipes look difficult and others downright sketchy, but also it can be made in a brewery or also like ice cream manufactured on a large scale. It is composed of natural and artificial flavorings like corn syrup; and there are preservatives such as sodium benzoate and quillaia extract which comes from the bark of trees and is a very useful plant other than for the enjoyment of consuming it.

Resources

http://en.wikipedia.org/wiki/ice_cream_soda [1]

~ Talks about the origins of the root beer float

~ The different flavors of soda and ice cream that you can make with it

http://en.wikipedia.org/wiki/ice_cream [2]

~ what's in ice cream

~ how it can be made

<http://www.nutritionanlyser.com/food-composition/?fid=14157> [3]

~ gives a label for what's in root beer

http://www.sciencebuddies.org/science-fair-projects/project_ideas/Chem_p023.shtml [4]

~ tells about an experiment for making ice cream

http://en.wikipedia.org/wiki/Sodium_benzoate [5]

~ Gave me brief description of what Sodium Benzoate is

<http://en.wikipedia.org/wiki/Fermentation> [6]

~ Gives info about different types of fermentation

<http://en.wikipedia.org/wiki/Quillaia> [7]

~ talks about the quillaia extract found in root beer

<http://science.howstuffworks.com/innovation/edible-innovations/ice-cream3.htm> [8]

~ how ice cream is made, and where it can be made

http://www.greydragon.org/library/brewing_root_beer.html [9]

~ how to brew root beer and a slight history of its origins in the colonies

About the Author

Marissa Van Atta is a junior at Billings Senior High School. She is very active in the athletics at Senior High by participating on the basketball, track, and soccer teams. Recently this year her soccer team took the AA State Title for the first time in girls soccer history at Senior. As well as last year she contributed to helping the girls track team take the AA State Title for the second year in a row. She also is apart of Senior Advocates, Trading Cards, and is the student



[10]

body Secretary. In her spare time from school she loves to immerse herself with her horses and to go camping , boating, hiking and trail riding with her family and friends.

Source URL: <http://dodstarbase.org/articles/chemistry-root-beer-floats>

Links:

[1] http://en.wikipedia.org/wiki/ice_cream_soda

[2] http://en.wikipedia.org/wiki/ice_cream

[3] <http://www.nutritionanalyser.com/food-composition/?fid=14157>

[4] http://www.sciencebuddies.org/science-fair-projects/project_ideas/Chem_p023.shtml

[5] http://en.wikipedia.org/wiki/Sodium_benzoate

[6] <http://en.wikipedia.org/wiki/Fermentation>

[7] <http://en.wikipedia.org/wiki/Quillaia>

[8] <http://science.howstuffworks.com/innovation/edible-innovations/ice-cream3.htm>

[9] http://www.greydragon.org/library/brewing_root_beer.html

[10] <http://www.chemistryislife.com/the-chemistry-of-root-beer-floats/Van%20Atta%20Picture%20Root%20Beer%20Float.JPG?attredirects=0>