

# Sensory Evaluation of Consumer Acceptance of All-Natural and Lactose Free Vanilla Ice Cream when compared with Original Recipe Vanilla Ice Cream

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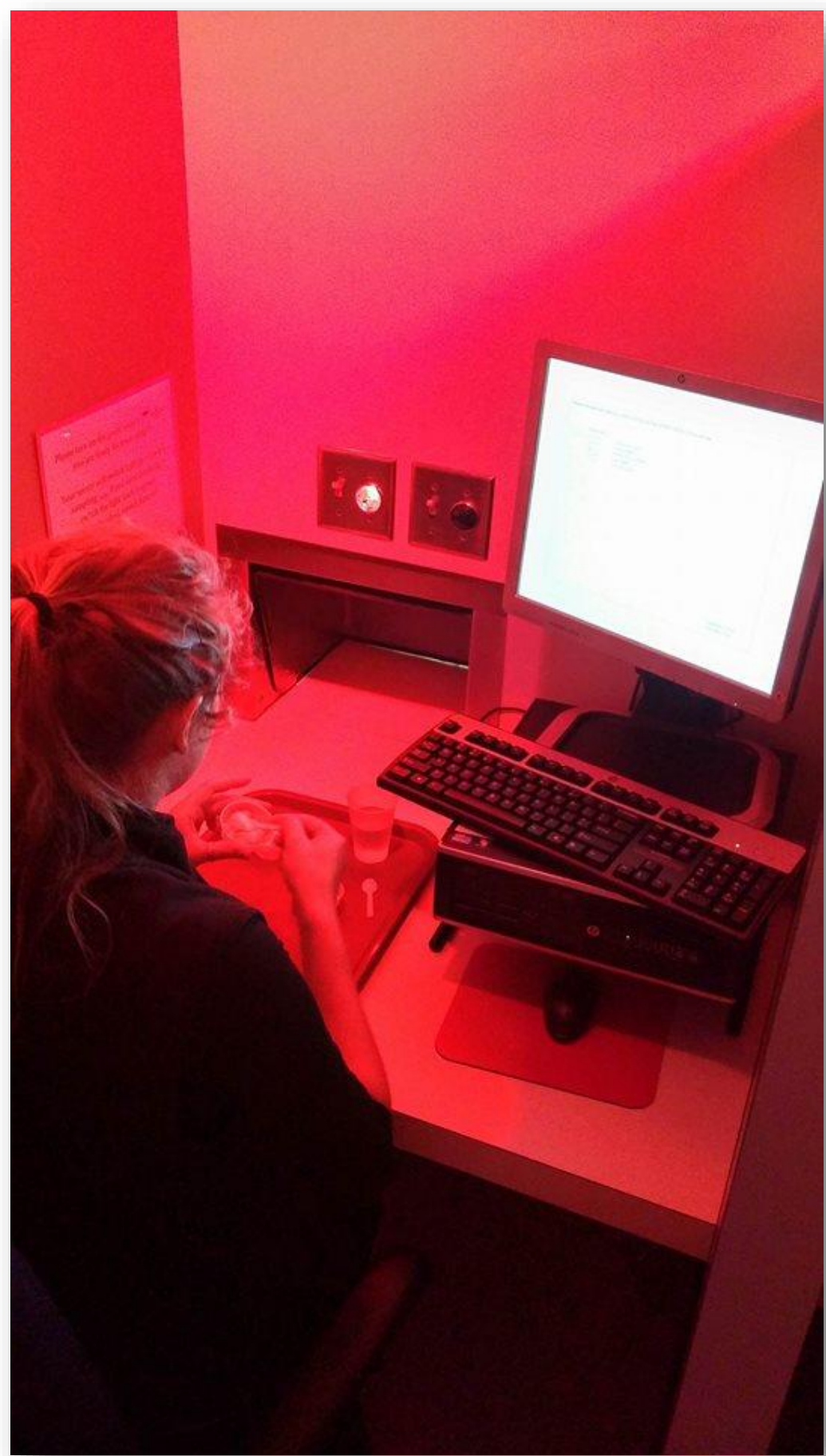
## Abstract

Ice cream is a popular treat for many Americans. In an effort to reach the lactose free and “all natural” consumer, companies have created alternatives that satisfy these needs. In this study, 102 participants evaluated Blue Bunny Premium Vanilla Ice Cream, Great Value All Natural Vanilla Bean Ice Cream, and Breyers Lactose Free Vanilla Ice Cream. The purpose of this study was to compare the ratings and likings of the ice creams to determine how natural and lactose free ice cream compare with a standard recipe ice cream. Many attributes were evaluated including liking of sweetness, intensity of vanilla flavor, liking of vanilla flavor, liking of mouthfeel, liking of aftertaste, and overall liking. Participants were also asked to rank the samples and their purchasing preferences. Overall, this study found no significant differences between the all-natural ice cream and the original recipe, making it an acceptable substitute. The all natural ice cream was liked significantly more than the lactose free ice cream. However, there was not a significant difference between the original recipe and the lactose free ice cream and can therefore be concluded that both the all-natural and lactose free ice cream are considered acceptable substitutes for original recipe ice cream.

## Introduction

Until 1800, ice cream was a rare and exotic desert and it wasn’t until 1851 was ice cream even manufactured in America [3]. Widely available today, ice cream is enjoyed all over the United States and across the world. All frozen desserts can be generalized and reduced to the certain manipulations of water, sugar, air, fat, and cold application [3]. Consumers expect a creamy texture, which, in part, is from cooling and churning, but also from sugar. Alton Brown from Good Eats explains on the episode of “Churn Baby Churn”, a balanced amount of liquid sugar, portioned in a way that the product is not too syrupy and not too solid when served impossible to serve. Typically the standard added flavor is vanilla, and a pinch of salt is added to enhance the vanilla flavor. Brown continues to explain that the flavor formula must also account for being served cold which numbs the tongue, and therefore needs an intense flavor to compensate. According to the American Heart Association, there is a steady increase in cardiovascular disease in the United States, contributed in part to high fat diets; there is a growing consumer demand for healthier alternatives including this beloved dessert.

## Materials and Methodology

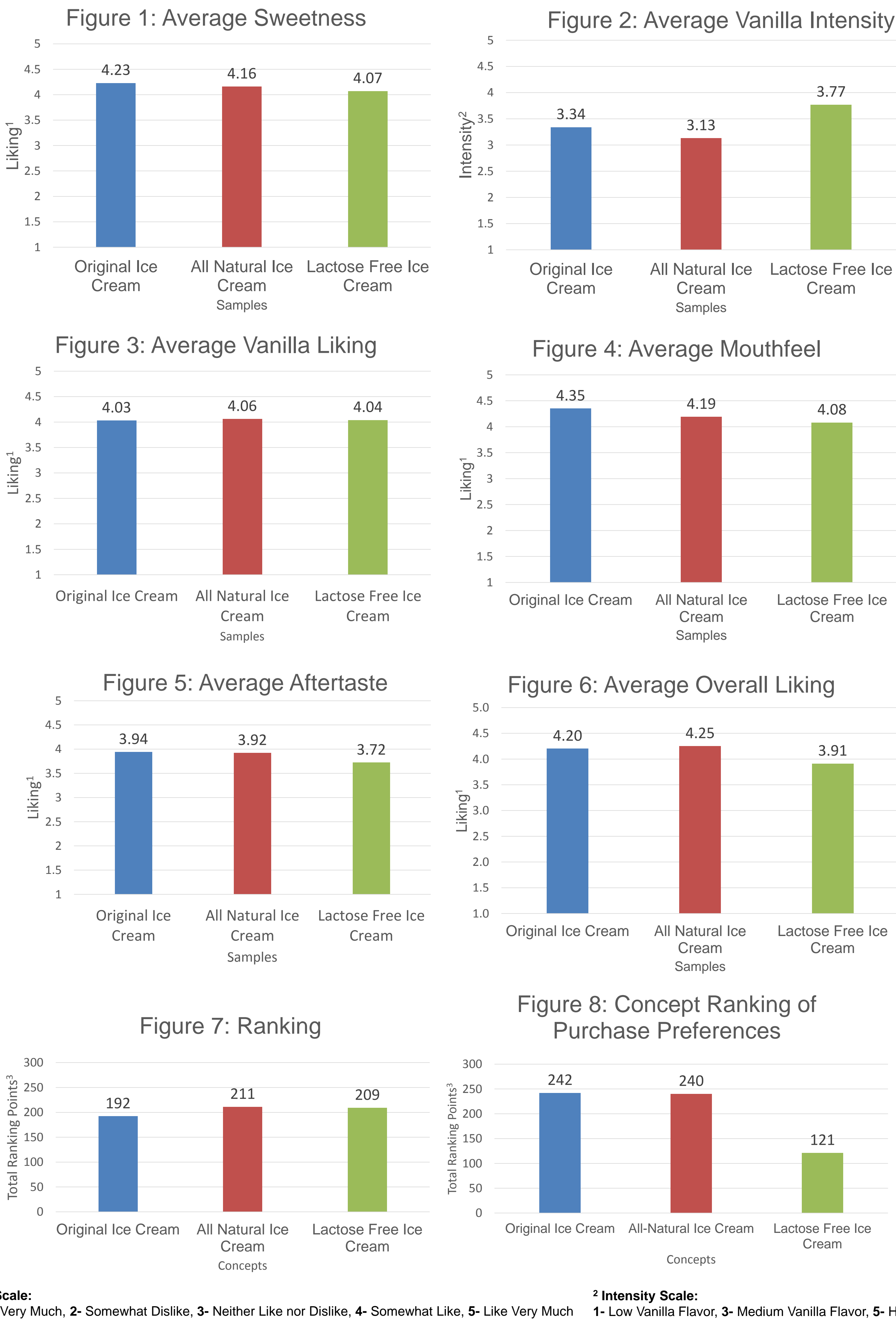


- In 4oz cups lactose free ice cream (719), Original ice cream (596), and All Natural (498) were evenly scooped and distributed to each participant.
- To prevent bias, the computer randomized and balanced order the samples were distributed. A red filter light was also used to camouflage any color difference.
- Water was provided and participants were asked to drink it in between the three samples and evaluate each sample from left to right following the order of the sample code given on the screen.
- A 5 point Hedonic liking scale was used to evaluate the liking or disliking of sweetness, vanilla flavor, intensity of vanilla flavor, creaminess/mouthfeel, aftertaste, and overall flavor. The closing questions asked to rank ice creams in order of liking and in frequency of consumption.
- The questionnaire was completed on the Compusense five system.

## Samples



## Data



## Results

In Figures 1-6, the sensory attributes evaluated were, for liking, sweetness, vanilla, mouthfeel, aftertaste and overall in addition to vanilla intensity. These were evaluated for significance at  $\alpha=0.05$  and  $n=102$ . Only Figure 6, overall liking, showed a significance ( $p=0.0245$ ) in results. This is considered a main attribute of the products. The Great Value All Natural Vanilla Bean Ice Cream had a higher rating on the Hedonic scale than the Breyers Lactose Free Vanilla Ice Cream. The Blue Bunny Premium Ice Cream was not significantly different than either of the other samples.

Figure 7 shows the rankings of the three ice creams sampled. No significant difference was show. Figure 8 shows the rankings of the concept of the purchase preferences of consumers for the types of ice creams sampled. The all natural and original ice cream were ranked significantly higher ( $p=$  than the lactose free ice cream.

According to Figure 9, the majority of participants consume ice cream on a weekly or monthly basis.

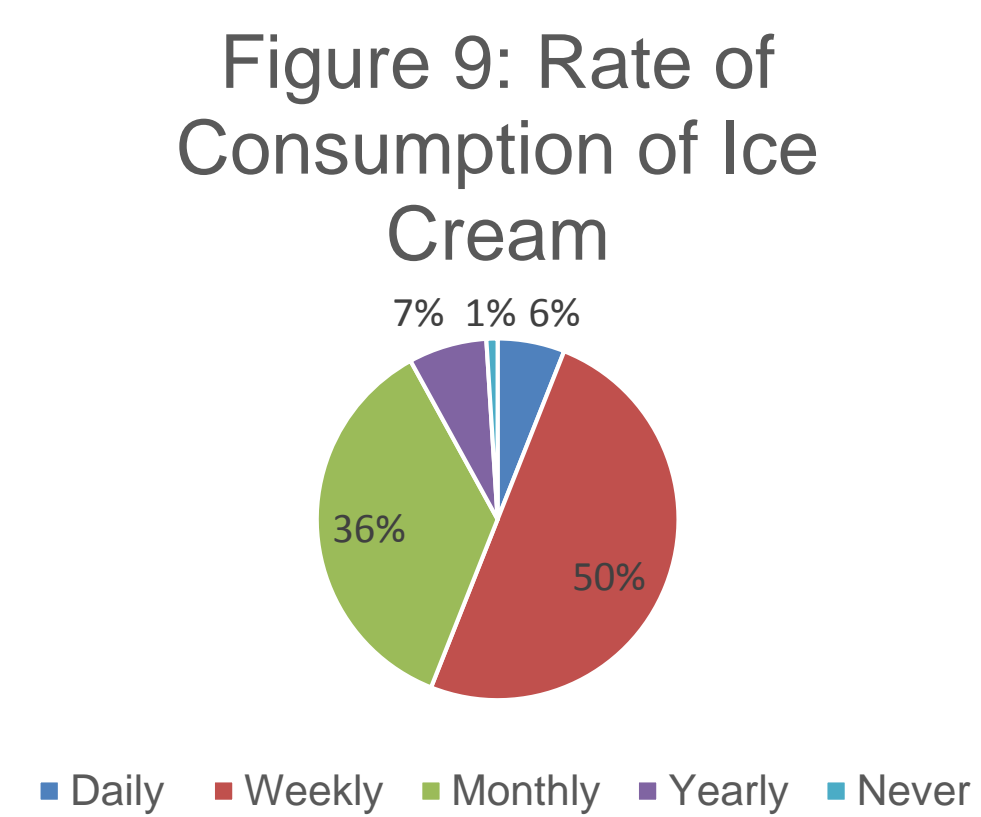
## Discussion

For the sensory evaluations of, for liking, sweetness, vanilla, mouthfeel, and aftertaste and the evaluation of vanilla intensity, no significant differences were found. For the overall liking, the all-natural flavoring was significantly preferred over the lactose free version, but neither were significantly different than the original ice cream.

When ranked on sensory attributes, none of the varieties were significantly preferred. However, when ranked as a concept, the all-natural and original versions were ranked significantly higher than the lactose free.

## Conclusion

Based on the findings of this sensory evaluation, there is no perceived difference between the overall acceptance of all-natural or lactose free ice cream when compared to original ice cream. This rating is not based off of price, nutritional, or political bias. However, when asked to rank the concepts of the sampled products, both the original and the natural were preferred. These conclusions were made directly off of the results obtained in the sensory evaluation, and can be used when looking at ingredient functionality, cost efficiency, and consumer preferences while developing new ice cream and flavored frozen dessert products.



## Resources

- [1] Brown, A. (Writer and Director) (1999). Churn Baby Churn[Television Series]. In A. Brown (Producer) *Good Eats*, Atlanta, GA: Food Network.
- [2] Hennekens, C. H. (1998). Increasing Burden of Cardiovascular Disease: Current Knowledge and Future Directions for Research on Risk Factors. *Circulation*, 97. (1095-1102) Retrieved from <http://circ.aha.org/content/97/11/1095.full>
- [3] International Food Dairy Association. (2015) *History of Ice Cream*. Retrieved from: <http://www.idfa.org/news-views/media-kits/ice-cream/the-history-of-ice-cream>