Honors 177

MIDTERM

Title:

# A Ride In The Digestive:

## Diet Soda vs. Juice

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Major: Psychology, Pre-Med

# ABSTRACT

The interactive ride through a 4-story tall human digestive system model will allow the participant to hear, see, and even if they choose smell the processes that go on when the body digests food. This project's goal is to reveal firsthand, the differences in how diet sodas and regular fruit juices are digested and processed by the human body. It will educate the participants in the negative side effects associated in digestion and processing of diet drinks while revealing the nutritious breakdown of fruit juices.

# CONCEPT / TOPIC

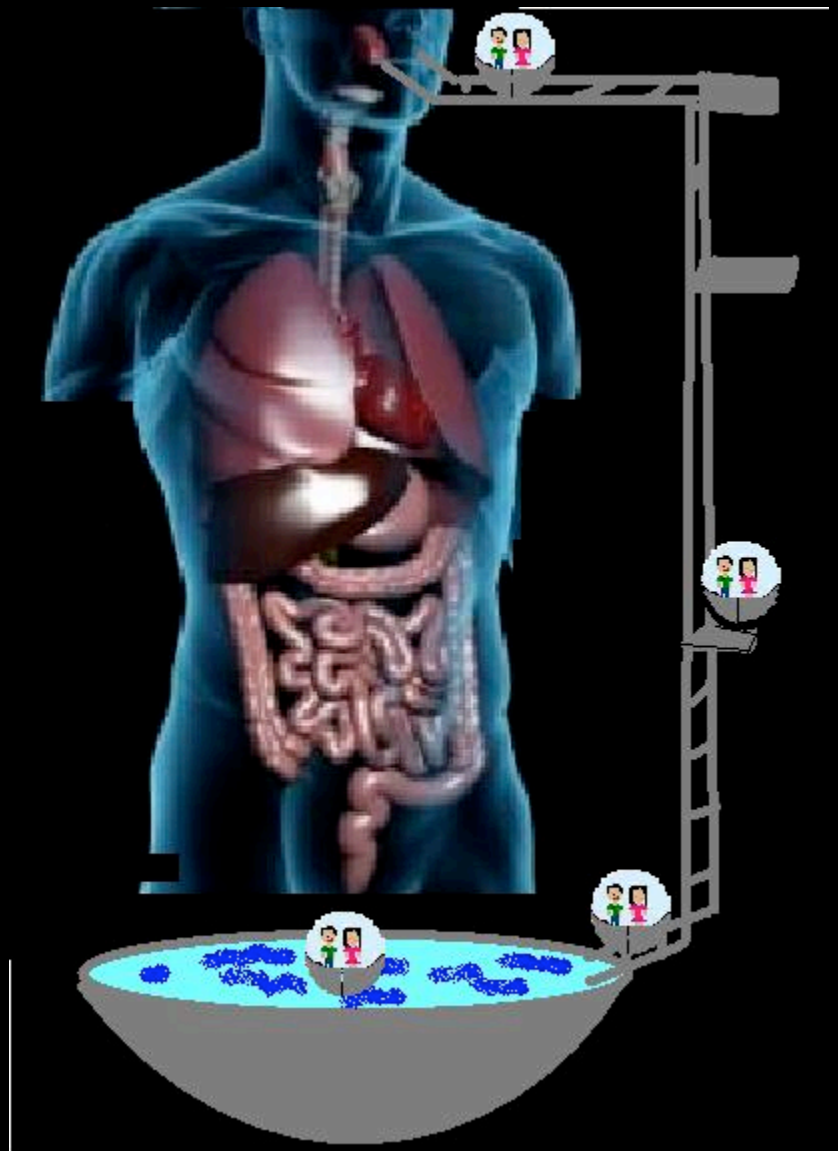
I am interested in exploring the effects of artificial sweeteners on the human body through an artistic means of representation of the digestive system. I want to educate the public in how our bodies breakdown chemicals such as aspartame and natural compounds such as sugars found in fresh fruit juices. Aspartame is a chemical used as an artificial sweetener in most diet drinks including diet Coke and diet Pepsi. Through a comparison of how our bodies handle diet drinks and fruit juices I hope to convey to the public the dangers of artificial sweeteners.

# CONTEXT & PRECEDENTS

Aspartame, the sweetener in diet sodas, has three by-products which are similar to what is found in fruit juices: methanol, formaldehyde, and formate.[1] However, the methanol that is found in our juices is in fact bound so it can not be absorbed by the body unlike aspartame, in which the methanol is not bound by ethanol.

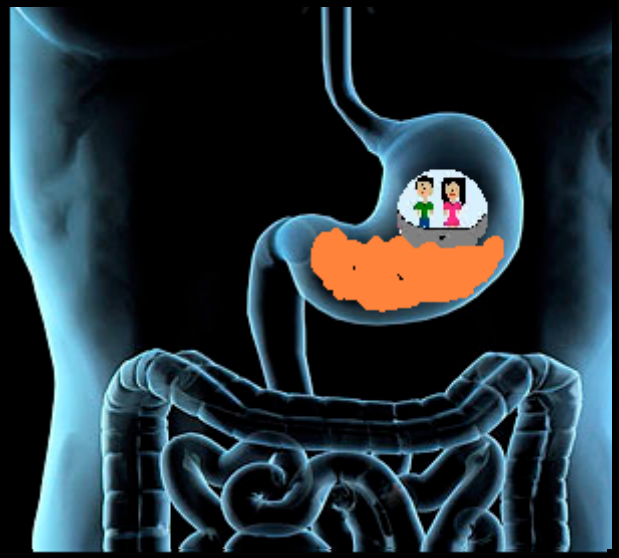
The FDA continues to reaffirm that there is no significant harm done by the consumption of aspartame. However, when the FDA did approve aspartame it did so with some hesitation. The commissioner of the FDA resigned three months after approval for aspartame, to work for Monsanto, the chief producer of aspartame[2]. More importantly a published scientific study on rats has shown that consumption of aspartame my be hazardous because of the build-up of formaldehyde[3].

# PROJECT PROPOSAL



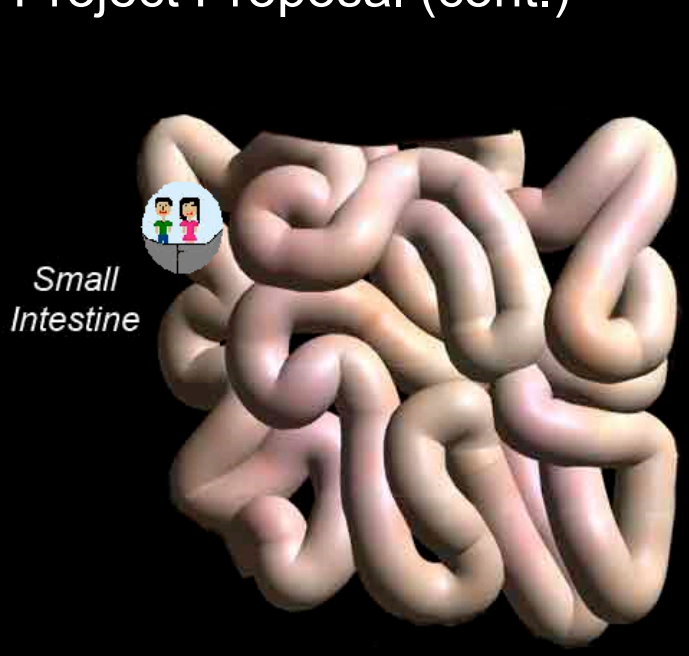
A four story tall human model will be constructed with the digestive system inside. A pod will be designed to transport up to six passengers through the digestive system. The ride will begin in the mouth where the pod will be “swallowed” along with the designated drink. The pod will then pass through the oesophagus, stomach, and the intestine. Inside the Pod the passengers will be able to see what is going on through the windows and hear through the speakers. Additionally there will be an LCD screen providing information on the chemical breakdown that is going on, surrounding temperature, an interactive map and much more. The passengers, if daring enough, will also have the option to sense what it smells like at each stage of digestion.

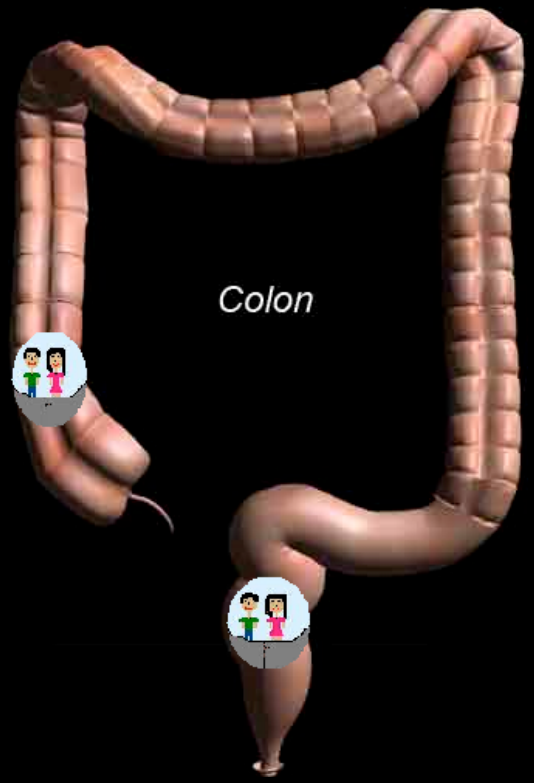
# Project Proposal (cont.)



The passengers will enter the pod and fasten their seatbelts. They can then choose which aspartame containing drink (Diet Coke or Diet Pepsi) and which juice (Apple Juice or Orange Juice) to compare on their ride through the digestive system. First they will experience how fruit juice is processed then they will experience how diet drinks are processed. Both journeys will be video recorded and on the second time around the passengers have the video of their last ride to compare to their current ride. Upon beginning of the ride, the mouth fills with the designated drink and the pod is swallowed along with the drink. The Pod will pass through the oesophagus and will enter the stomach. Stomach acid mixes with the drink to start the digestion process and at this point the pod remains in the stomach for about 3 minutes, where passengers can experience the chemical breakdown.

# Project Proposal (cont.)




The Pod will then enter the small intestine where chemical digestion continues. The pancreas, liver and gallbladder secretions will pour into the small intestine and continue to breakdown the chemicals. The passengers can experience the difference between the amount of secretions necessary for diet drink vs. the fruit juice. The passengers in the pod can see the nutrition content and chemical breakdown of their drink on their screens. They will then enter the large intestine in which re-absorption occurs. At this point most of the liquid is absorbed and the screen will show the nutritious breakdown and advantages and disadvantages of the drink. The Pod is then expelled in a pool and the passengers can then exit their pods and go back up to re-experience the ride with diet soda

# Conclusion

For most of us it is hard to realize the effects of products we consume has on our bodies. This interactive ride allows the users to get a better sense of what goes on in their body as one drinks diet soda and when one drinks juice. This ride gives the users a chance to better understand the harm of aspartame containing drinks and the benefits of drinking juices instead. This project can be taken a step further and used to show how the body digests processed foods and bleached flour compared to whole wheat flour and unprocessed foods.

# References

1 John McManamy, “Don’t Drink the Diet Coke.” McMan’s Depression and Bipoalr Web. 8 Feb. 2008. 24 Apr. 2009 http://www.mcmanweb.com/diet_coke.html

2 “Recent Independent Aspartame Research Results & News.” Holistic Medicine. 1998-2007. 23 Apr. 2009 http://www.holisticmed.com/aspartame/recent.html

3 *Trocho,* C. Pardo, R. Rafecas, I. Virgili, J. Remesar, X. Fernández-López J. A. and M. Alemany *"Formaldehyde Derived From Dietary Aspartame Binds to Tissue Components in vivo," Life Sciences, Vol. 63, No. 5, (1998)* 337-349

# Bibliography / Links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