Fluid Viscosity and Thirst Quenching

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INTRODUCTION

◊ A body desires water to fulfill its needs2,4. Those with dysphagia cannot drink water because they may aspirate the liquid. They instead drink a thickened beverage to quench their thirst. Past research has shown that thick beverages are not thirst quenching2.

◊ The six beverages in this study were tested for their liking and thirst quenching ability. The beverages selected were sugar, citric acid, both sugar and citric acid, cloudy/milky white, cold in temperature, and a control. The variations of beverages in this study did not significantly improve the thirst quenching ability of the thickened beverage.

◊ Students and staff from the University of Minnesota-Twin Cities participated in a sensory panel taste test. The base mixture for all of the six beverages was a 5.2% cellulose gum premix and distilled water as a honey consistency. The six beverages were control, sweet (2.8% sugar), sour (0.2% citric acid), cloudy (0.1% titanium dioxide-milky white color), cold (held in the refrigerator), and then sweet and sour (3.4% sugar and 0.2% citric acid). The 42 participants consumed a mouthful of the six beverages and answered questions pertaining to their liking and the thirst quenching ability of the beverages.

◊ The panelists were asked their initial thirst level before consuming the beverage on a line scale from 0-15 from not thirsty to extreme thirst. After they consumed a mouthful of the beverage, they indicated their thirst level again. The panelists were asked how well the beverage quenched their thirst (Fig 1) and their level of liking of the beverage (Fig 2). This process was repeated for each of the six beverages.

RESULTS

◊ The samples did not significantly differ in thirst quenching ability and level of liking. The histograms of the level of liking and thirst quenching ability for each of the beverages were not a normal distribution.

◊ There were only slight differences between the samples pertaining to thirst quenching and level of liking as shown in Figure 3 and 4. It can only be speculated that there is a trend between sour ingredients and thirst quenching ability (Fig 3). The cloudy thickened beverage that resembled the color of milk resulted with a slightly higher value in the level of liking (Fig 4).

◊ The difference of the initial and final thirst level were compared to the thirst quenching ability of the beverages.

◊ The difference in thirst from before to after consumption of the thickened beverage versus the thirst quenching rating of each thickened beverage is shown in Figure 5. The difference in thirst was not significantly influenced by the addition of an ingredient, change of the temperature, or change of the color.

◊ The combination of acidic and sweet components seemed to help the thirst quenching ability.

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