

Effects of four colors on perceived deliciousness, taste, and texture of a pudding among university students

Tomoko Osera ¹⁾²⁾, Takako Koriyama ¹⁾, Sae Okada ¹⁾, Nobutaka Kurihara ²⁾
 1) Toyo University, 2) Kobe Women's University



Background

For older adults who have difficulty chewing and swallowing, an easy nutrition source such as pudding, a rich nutritious sweet that is enjoyed by people of all generations, may be available. At that time, the color of food and dishes affects appetite and perceived taste. However its effect on deliciousness and taste still has many unclear points.

Objective

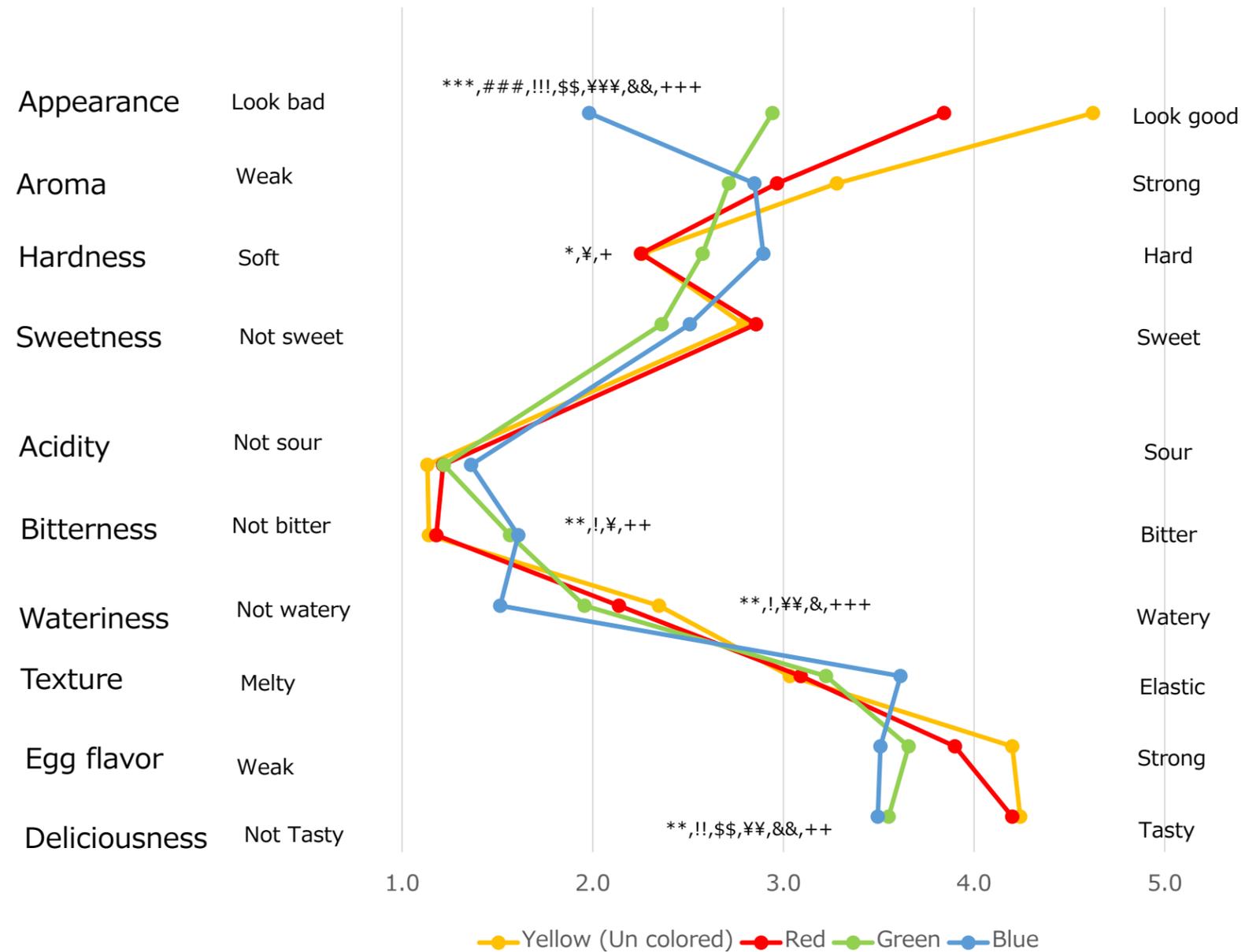
To examine the effect of pudding color changes on perceived taste and deliciousness.

Study Design, Setting, Participants

All puddings had the same ingredients and cooking processes, except for egg liquid, which was mixed with either of the following artificial colorings: yellow (uncolored), red, green, and blue. The uniformity of the pudding was confirmed using a texture analyzer. Twenty-one healthy students aged 20-21 years with normal vision, taste, and appetite were recruited to this study.

Measurable Outcome/Analysis

Color effects were then evaluated according to the following parameters: appearance, aroma, hardness, sweetness, acidity, bitterness, wateriness, texture, egg flavor, and deliciousness. Subsequent statistical analyses were conducted using Kruskal–Wallis and Mann–Whitney *U* tests, with the significance level set at < 5%.



Percentile	Appearance	Aroma	Hardness	Sweetness	Acidity	Bitterness	Wateriness	Texture	Egg flavor	Deliciousness
25	2.3	2.6	2.0	2.0	1.0	1.0	1.4	2.5	3.1	3.4
75	4.5	3.3	3.0	3.0	1.3	1.5	2.3	4.0	4.6	4.5

Figure 1. Results of the sensory evaluation of eating pudding colored yellow, red, green, and blue

Evaluated example by a 5-point likert scale 1 (extremely weak) to 5 (extremely strong). Kruskal–Wallis test, **p*<0.05, ***p*<0.01, ****p*<0.001. Mann–Whitney *U* test, A vs B#, A vs C!, B vs C\$, B vs D¥, C vs D&, A vs D+, #*p*<0.05, ##*p*<0.01, ###*p*<0.001

Results

Actual hardness and adhesion were not different between the four colored puddings, but appearance and perceived hardness, acridness, wateriness, and deliciousness were significantly different (*p* < 0.05). In terms of color, yellow was superior in appearance and perceived deliciousness, followed by red, green and blue. However, hardness, acridness, and wateriness showed a different order of superiority. Blue pudding felt harder than yellow and red puddings (*p* < 0.05).

Conclusion

Color may change not only the perceived taste and deliciousness but also the perceived hardness, acridness, and wateriness of the puddings. Moreover, puddings with warm colors such as yellow and red may be more preferable than those with cool colors such as green and blue. Future studies are necessary to investigate whether the results would be the same for other sweets and other generations including older adults. Color may change the perceived taste, deliciousness and texture of a pudding.