

Exhibition of Undergraduate Research and Creative Achievement (EURēCA)

Student Name(s): Sheryl Katherine Benson	Title of Presentation: Repeated Food Exposure via the Olfactory and Gustatory Systems and Rate of Salivary Habituation
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Abstract: *(Type in 12 point font to fit the box below.)*

Background: Developing effective dietary prescriptions for weight loss are needed. Satiation, the process by which an eating bout ends, assists with eating regulation, and factors that quicken satiation may aid with decreasing intake. One factor believed to influence satiation is the rate of decrease in consummatory response (habituation) to repeated presentations of food orosensory cues. The purpose of this investigation was to examine the rate of salivary habituation that occurred in 12 trials of exposure to an orosensory stimulus via the olfactory, gustatory, or combined olfactory and gustatory systems.

Procedures: Participants (n = 31) were healthy weight (body mass index between 18.5 and 24.9 kg/m²), non-smoking females, aged 18-30 years, who liked the flavors of lemon and lime, and who were non-dieting, non-binge eating, unrestrained eaters, and also not taking medications that influence salivation, smell or taste. Participants were randomly assigned to one of three conditions: Smell (n = 10), Taste (n = 11), or Smell + Taste (n = 10). Participants came in for one, 90-minute session, in which they completed 14, 2-minute trials that measured salivary flow in response to an orosensory stimulus. For the 14 trials, participants completed 2 baseline trials, in which they were exposed to water, and then they completed 10 trials of exposure to lemon juice. At the end of the 10 trials, participants completed two additional trials of exposure to lime juice. The type of orosensory exposure each participant received corresponded to the condition she had been randomized. Salivary flow was measured from the absorption of saliva by three cotton rolls placed in the mouth.

Results: A mixed-factor analysis of variance (ANOVA) with the between-subject factor of condition and the within-subject factor of trial was used to analyze salivary flow. A significant ($p < 0.01$) condition x trial interaction occurred. For Taste, Baseline 2 trial was significantly ($p < 0.05$) lower than all Lemon and Lime trials. For Smell + Taste, Baseline 2 trial was significantly ($p < 0.05$) lower than Lemon 1, 2, 4, 5, and 6 trials. There was no significant difference in any trials in Smell.

Conclusion: Habituation occurred following repeated exposure to an orosensory stimulus via the gustatory and olfactory systems. Repeated gustatory and olfactory exposure to an orosensory stimulus prior to consumption may enhance satiation.