

Temporal patterns in taste sensitivity

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Individuals vary in their ability to taste, and some individuals are more sensitive to certain tastes than others. Taste sensitivity is a predictor of various factors, such as diet, eating behavior, appetite regulation, and overall health. Furthermore, taste sensitivity can fluctuate within an individual over short to long periods of time: for example, in daily (diurnal) cycles, monthly (menstrual) cycles (in females), and yearly (seasonal) cycles. Understanding these temporal patterns is important for understanding individual eating habits and food preferences, particularly in the context of personalized and precision nutrition. This review provides a summary of the literature on taste sensitivity patterns across 3 temporal dimensions: daily, monthly, and yearly. Good evidence for diurnal patterns has been observed for sweet taste and fat taste, although the evidence is limited to rodent studies for the latter. Obese populations showed limited variation in sweet and fat taste sensitivities over a day, with limited variation in sweet taste sensitivity being linked to insulin resistance. There were mixed observations of temporal variation in sensitivity to sour and umami tastes, and there were no patterns in sensitivity to bitter taste. Menstrual patterns in sweet taste sensitivity were consistent with patterns in food intake. Other taste modality investigations had mixed findings that had little agreement across studies. Hormonal changes in females influence taste sensitivity to some degree, although the overall patterns are unclear. Seasonal patterns have been less well studied, but there is weak evidence that sweet, salty, and bitter taste sensitivities change across seasons. Differences in seasonal taste patterns have been observed in subgroups susceptible to mental health disorders, requiring further investigation. Patterns of taste sensitivity are evident across multiple temporal dimensions, and more research is needed to determine the influence of these patterns on food intake. Dysregulation of these patterns may also be a marker of certain diseases or health conditions, warranting further investigation. Notably, the alimentary tastes (umami, fat, and carbohydrate) are underrepresented in this research area and require additional investigation.

Key words: circadian, diurnal, gustation, menstrual, seasonal, sensitivity, taste.

INTRODUCTION

Taste sensitivity, which is the ability to perceive or identify a taste stimulus, has a clear impact on an individual's food intake and eating behavior. In general, people

who are more sensitive to certain tastes tend to consume less of foods that exhibit that taste, while individuals with lower sensitivity to certain foods require stronger taste sensations or greater food intake to experience the same level of perception.¹ For example,

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Table of Contents Studies On Sensitivity Of Taste And Eating Behavior Of

1. Understanding the eBook Studies On Sensitivity Of Taste And Eating Behavior Of
 - The Rise of Digital Reading Studies On Sensitivity Of Taste And Eating Behavior Of
 - Advantages of eBooks Over Traditional Books
2. Identifying Studies On Sensitivity Of Taste And Eating Behavior Of
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Studies On Sensitivity Of Taste And Eating Behavior Of
 - User-Friendly Interface
4. Exploring eBook Recommendations from Studies On Sensitivity Of Taste And Eating Behavior Of
 - Personalized Recommendations
 - Studies On Sensitivity Of Taste And Eating Behavior Of User Reviews and Ratings
 - Studies On Sensitivity Of Taste And Eating Behavior Of and Bestseller Lists
5. Accessing Studies On Sensitivity Of Taste And Eating Behavior Of Free and Paid eBooks
 - Studies On Sensitivity Of Taste And Eating Behavior Of Public Domain eBooks
 - Studies On Sensitivity Of Taste And Eating Behavior Of eBook Subscription Services
 - Studies On Sensitivity Of Taste And Eating Behavior Of Budget-Friendly Options

6. Navigating Studies On Sensitivity Of Taste And Eating Behavior Of eBook Formats
 - ePub, PDF, MOBI, and More
 - Studies On Sensitivity Of Taste And Eating Behavior Of Compatibility with Devices
 - Studies On Sensitivity Of Taste And Eating Behavior Of Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Studies On Sensitivity Of Taste And Eating Behavior Of
 - Highlighting and Note-Taking Studies On Sensitivity Of Taste And Eating Behavior Of
 - Interactive Elements Studies On Sensitivity Of Taste And Eating Behavior Of
8. Staying Engaged with Studies On Sensitivity Of Taste And Eating Behavior Of
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Studies On Sensitivity Of Taste And Eating Behavior Of
9. Balancing eBooks and Physical Books Studies On Sensitivity Of Taste And Eating Behavior Of
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Studies On Sensitivity Of Taste And Eating Behavior Of
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Studies On Sensitivity Of Taste And Eating Behavior Of
 - Setting Reading Goals Studies On Sensitivity Of Taste And Eating Behavior Of
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Studies On Sensitivity Of Taste And Eating Behavior Of
 - Fact-Checking eBook Content of Studies On Sensitivity Of Taste And Eating Behavior Of
 - Distinguishing Credible Sources
13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
14. Embracing eBook Trends
 - Integration of Multimedia Elements

- Interactive and Gamified eBooks

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