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12-10-2014

Comparison of Tetrad and Degree of Difference Sensory Testing Methods in Evaluating the Quality of Flour Tortillas

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Recommended Citation

Futalan, Kristine; Toto, Criselda; and McDonald, Heather, "Comparison of Tetrad and Degree of Difference Sensory Testing Methods in Evaluating the Quality of Flour Tortillas" (2014). *Student Research Day Abstracts and Posters*. Paper 61. http://digitalcommons.chapman.edu/cusrd_abstracts/61

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Discrimination sensory tests are methods used in sensory analysis to determine whether two samples are perceptibly different (Lawless and Heymann 2010). One of these tests is the Tetrad that has recently gained popularity in the sensory evaluation of foods. It has demonstrated superiority over the triangle test in both theory and practice with its proven relatively large statistical power (Christensen and Ennis 2014). In this test, panelists are presented four samples – two samples from one group and two samples into two based on similarity. Recent studies have shown that Tetrad has the potential to detect differences more reliably and with a smaller sample size than many other discrimination tests including the 2-AFC, 3-AFC and triangle methodologies (Christensen and Ennis 2014; Ennis 2012). Although, Tetrad can possess a drawback of sensory fatigue with the addition of its fourth stimulus (Ennis 2012). Another discrimination test utilized is the degree of difference (DOD) methodology. Two products (A and B) are presented to rate the degree of difference for a given sample pair on a scale (Bi 2002). There have been numerous studies comparing the precision and power of the Tetrad test vs. other discrimination tests, however there has been little research comparing the Tetrad vs. the DOD test. This project compared the precision and power of the Tetrad and DOD tests by measuring the flour tortilla quality from two different manufacturing lines in one commercial plant to determine if a sensory difference exists.

Research Objectives

- Compare the Degree of Difference and Tetrad discrimination between flour tortillas made from two different processing line
- Determine which of the two methodologies will provide greate financially wise

		Experimenta	al overv
	Tetrad		Refer
	Group 1	Group 2	Con
	You have been given 4 samples of bean bur each with a 3 digit code on them. Please try them from left to right. Then group the samples into 2 groups based on similarity. Write your answers here for Group 1 Sample # Sample # Comments:	ritos, of 2	Overall, considering everything, how DIFFE No Difference Please press the NEXT SAMPL you are ready for your next sam
		Conclu	isions
•	Results showed that the statist respectively. This higher power Tetrad may be substituted for I Tetrad has a smaller variance of	cal power of Tetrad as well as lack of sig OOD to achieve its sa d' than that of DOD	was higher gnificance b me power u suggesting
•	P-values indicated the panels in samples	both methodologies	did not det
•	Tetrad is a viable alternative to precision and accuracy of senso will also reduce the cost of prod	DOD in determining ry results. The subse uct testing.	differences equent redu

References

Bi J. 2002. Statistical models for the degree of difference test. Food Quality and Preference. 13:31-37. Christensen R, Ennis J. 2014. Precision measurement in Tetrad testing. Food Quality and Preference Ennis J, Rousseau B. 2012. Reducing Costs with Tetrad Testing. IFPress. 15: 3-4p Lawless H, Heymann H. 2010. Sensory Evaluation of Food. 2nd ed. New York: Chapman and Hall.

Comparison of Tetrad and Degree of Difference Sensory Testing Methods in Evaluating the Quality of Flour Tortillas

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Advisor: Dr. Fred Caporaso

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Introduction

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