The Acceptability of Different Squash Varieties in Lasagna to Increase Red-Orange Vegetable Consumption for School Nutrition Requirements

A.K. Pulvermacher & A.L. Evenson, PhD, RDN, CFS
College of Saint Benedict and Saint John’s University | St. Joseph, MN

Introduction
• Children and adolescents struggle to meet dietary guidelines for fruit and vegetable intakes
• High red-orange vegetable requirements for school nutrition

Purpose
• To evaluate the acceptability of squash varieties in a lasagna recipe to help meet school nutrition requirements for red-orange vegetables.

Methods
• A lasagna recipe was selected and adapted to create different versions with squash varieties - buttercup, butternut, and acorn
• Sensory panels were conducted in duplicate (n=66; mean age=18.89)
• Sensory analysis assessed liking of overall taste, squash flavor, lasagna flavor, appearance, and texture, using a 7-point hedonic scale
• Anova determined differences among the three squash lasagna recipes
• Significance was set at p<0.05
• All three lasagna recipes provided approximately 0.76 cups of red-orange vegetables, 280 calories, 11.5 g fat, and 245 mg sodium for a one cup serving

Nutrition Facts
<table>
<thead>
<tr>
<th>Serving Size</th>
<th>1 cup (328g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Servings per container</td>
<td>12</td>
</tr>
<tr>
<td>Amount Per Serving</td>
<td>Calories 280</td>
</tr>
</tbody>
</table>

% Daily value
- Total fat 11.5g: 18%
- Saturated fat 5g: 25%
- Trans fat 0g: 0%
- Cholesterol 50 mg: 17%
- Sodium 245 mg: 10%
- Total Carbohydrate 34g: 11%
- Dietary Fiber 5g: 20%
- Sugars 10g: 0%
- Protein 19g: 3%

*Percent Daily Values are based on a 2000-calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Ingredients: Squash, tomatoes, beef, onions, whole-wheat noodles, tomato paste, mozzarella cheese, colby jack cheese, water, various seasonings

Acknowledgements
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Results
• No significant differences in liking of overall taste, squash flavor, lasagna flavor, appearance, or texture among the three lasagna recipes (p>0.05)
• Average overall liking scores ranged from 4.64-5.00

Conclusions
• No difference between squash varieties
• Squash lasagnas were liked by panelists
• Butternut, Buttercup, and Acorn squash could be used interchangeably in the recipes
• Recipes could be implemented into foodservice to increase red-orange vegetable intake
• Future research could determine acceptability of different red-orange vegetable recipes in younger age groups

Average acceptance ratings of three different squash varieties in lasagna (Butternut, Acorn, & Buttercup)