Utilization of peanut flour and oil

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Hot Topics on Peanuts
Thomasville, Georgia

The University of Georgia

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Peanut flour

Peanut flours are low fat, high protein functional ingredients prepared from partially defatted, roasted peanut kernels

Types	Benefits	Products
Light	Enhance color	
Medium	High protein	
Dark	Peanut flavor	

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Peanut research

- Peanut flour utilization
  - Peanut pasta
  - Peanut drink
  - Peanut pancake
  - Peanut biscuit
  - Peanut ice cream
- Peanut oil for frying
- Peanut Information Network System

  www.worldpeanutinfo.com

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Welcome to PINS!

The Peanut Information Network System (PINS) is a USAID Peanut-CRSP funded project. PINS is a Web-based system to distribute information on peanut organizations, peanut related publications and training materials. PINS also provides information on world-wide peanut producer, processor and consumer values, peanut meetings and workshops, and other related news and useful links.

Peanut pasta

- Fortification of Pasta Protein
  - Durum wheat flour is high in protein, but the protein quality is inferior – lacking in lysine
  - Legume and animal proteins are usually higher in lysine than cereal grains and therefore make excellent supplements for improving the protein quality of pasta products.
  - When legume proteins are used, protein complementation occurs: not only does the legume improve the lysine content, but the cereal grain protein improves the methionine content of the legume

Peanut pasta preparation

Peanut flour provided by
the Golden Peanut Co.

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Packaging for sensory evaluation

EVALUATION OF PEANUT PASTA

INSTRUCTIONS: Cook the pasta according to the attached directions. Eat and evaluate.

Evaluation of Sample 614:

Please indicate how you would rate the peanut pasta sample "614" in each category. Place an "X" mark in the most appropriate box on the scale.

OVERALL IMPRESSION:

Like Extremely	Like Very Much	Like Moderately	Like Slightly	Neither Like nor Dislike	Dislike Slightly	Dislike Moderately	Dislike Very Much	Dislike Extremely
☐	☐	☐	☐	☐	☐	☐	☐	☐

COLOR OF COOKED NOODLES:

Too Light						Too Dark
☐	☐	☐	☐	☐	☐	☐

PEANUT FLAVOR INTENSITY:

Not Strong Enough						Too Strong
☐	☐	☐	☐	☐	☐	☐

TEXTURE OF COOKED NOODLES:

Too Soft						Too Firm
☐	☐	☐	☐	☐	☐	☐

CONSISTENCY OF COOKED NOODLES:

Too Moist						Too Dry
☐	☐	☐	☐	☐	☐	☐

EVALUATION OF PEANUT PASTA

Please rank these peanut pasta samples in order of your preference.
(Place a number in each box. 1 = most favorite, 3= least favorite)

Sample 479	Sample 823	Sample 561
☐	☐	☐

Explain._____
_____
_____

If peanut pasta were available in stores, how often would you buy peanut pasta instead of traditional pasta?
(Check appropriate box.)

Always	Sometimes	Never
☐	☐	☐

If other members of your household (provide information requested) tasted the pasta, which samples did they prefer and why?

1.
Gender_____
Age_____
Favorite sample_____
Reasons_____

2.
Gender_____
Age_____
Favorite sample_____
Reasons_____

3.
Gender_____
Age_____
Favorite sample_____
Reasons_____

Other Comments or Suggestions:
_____
_____
_____

Conclusions

- Optimum water content = 40%
- Optimum carrageenan content = 2 – 2.9%
- Maximum peanut flour level = 50%
- Moisture of dry pasta should be 8%.
- Color becomes darker with increasing peanut flour level and increasing drying temperature.
- Consumers generally approved of peanut pasta.

1. Howard, B. M. and Y.-C. Hung. 2010. Formulation of pasta noodles made with peanut flour. Peanut Science 37:95-99.
2. Howard, B. M., Y.-C. Hung and K. McWatters. 2011. Analysis of ingredient functionality and formulation optimization of pasta supplemented with peanut flour. Journal of Food Sci. 76(1):E40-E47.

Peanut drink/beverage

- **Instant beverage powders** are convenient mixtures of dry ingredients that can be quickly reconstituted to refreshing or nutritious beverages upon addition of water or milk with minimal stirring.
- **Previous Research on Instant Beverages**:
  - Green tea
  - Soy milk
  - Coffee
  - Fruit and vegetable juice
  - Cocoa beverages

Background

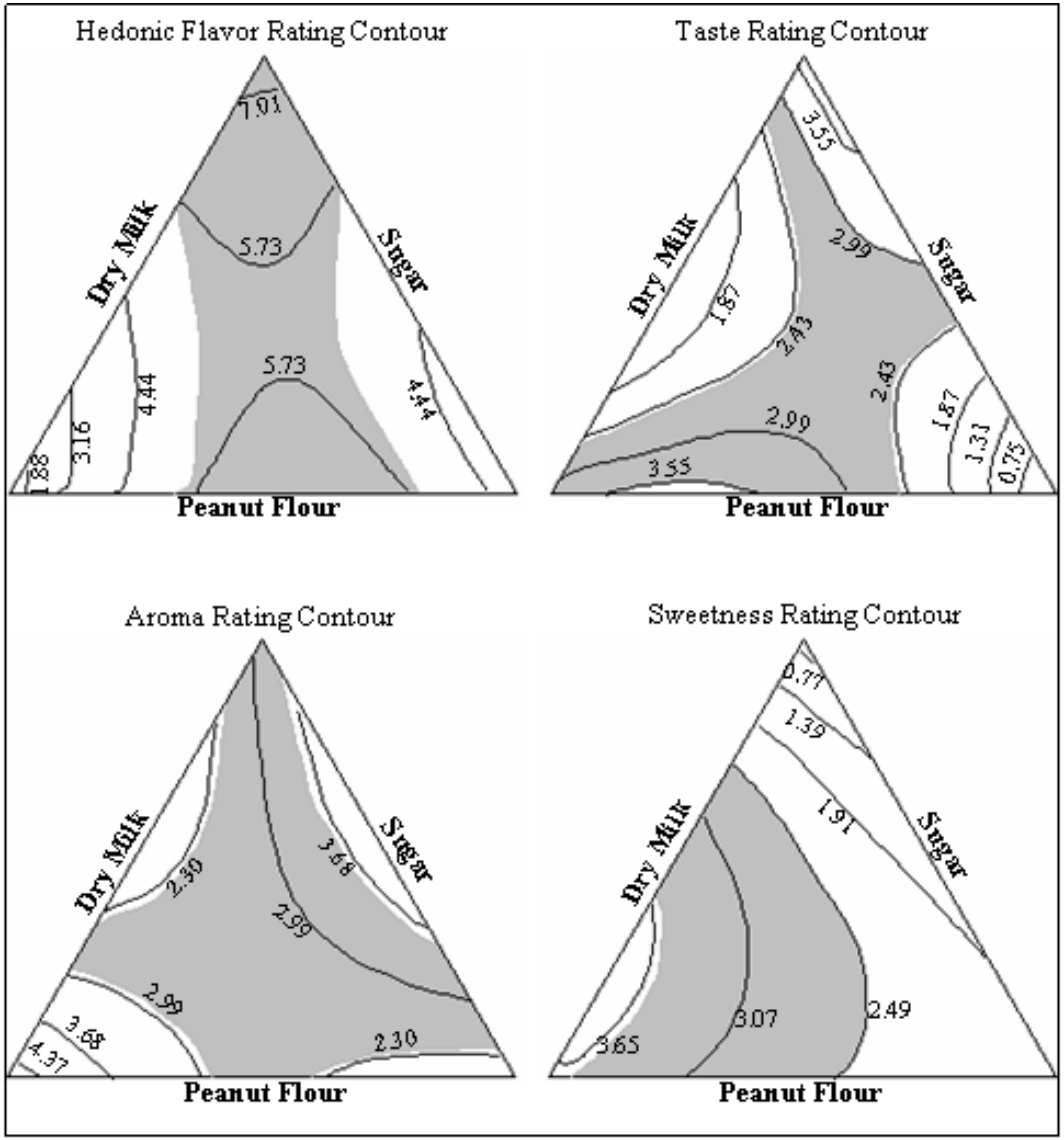
- Peanut flour as a beverage ingredient:
  - Small particle size
  - Water soluble
  - Instead of peanut butter (traditional shake ingredient), partially defatted peanut flour can be used as a reduced-fat alternative.
  - Since peanut flour is free-flowing and non-sticky, it can be easily mixed with other food ingredient powders; this method can allow manufacturers to create an “instant” beverage powder solely from dry ingredients, eliminating the need to subject a liquid version to drying processes.

Attrition milling of peanut flour

- Microparticulation, particle to particle milling for fine Powders

Results on flavor

FLAVOR



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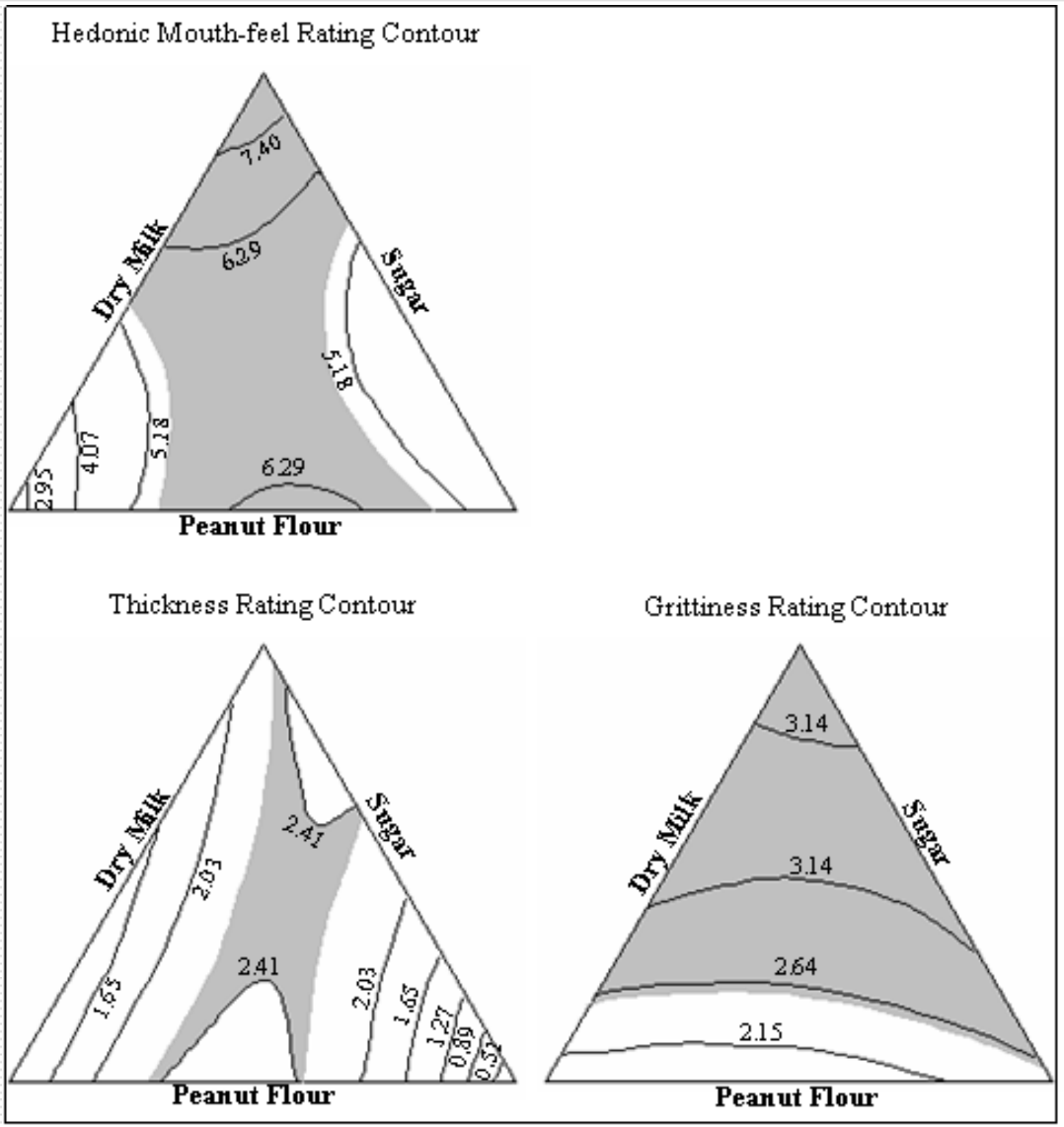
Results on mouthfeel

MOUTH-FEEL



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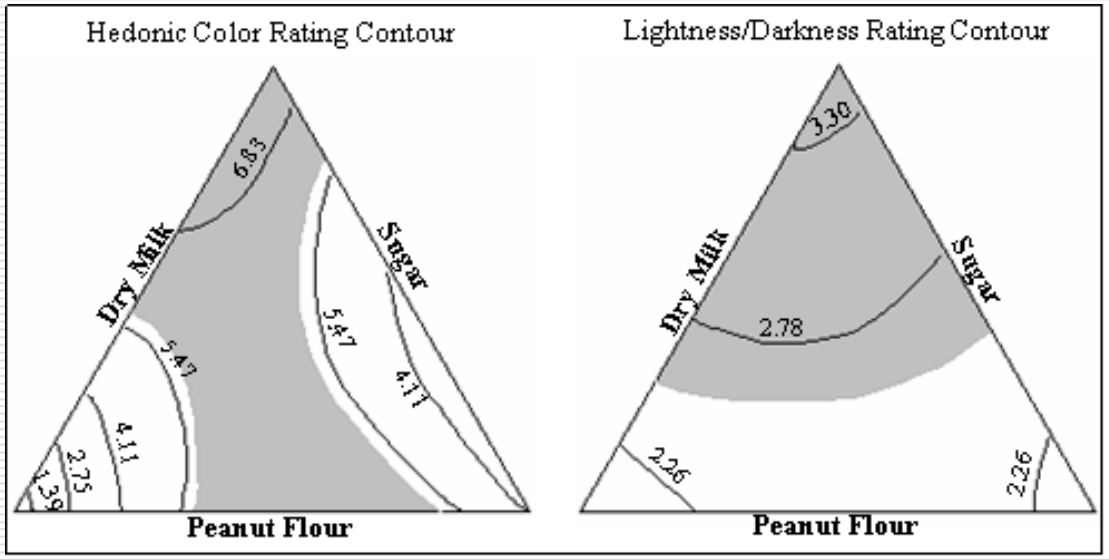
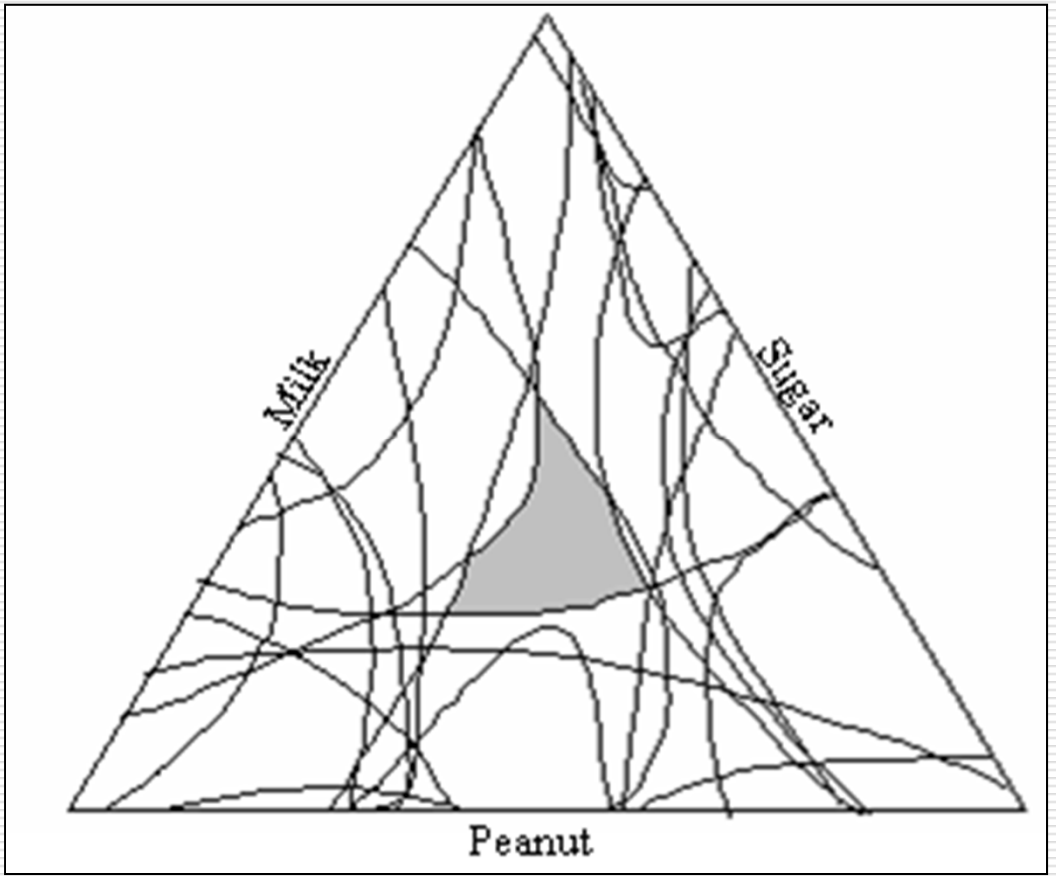
Results on color

COLOR



Conclusions

COMBINED PROPERTY OVERLAP – INDICATING OPTIMUM FORMULATION RANGE



Conclusions on peanut beverage

- Silicon dioxide anti-caking agent was shown to reduce sticking of peanut flour inside a mill
- Optimum formulation for consumer acceptability of peanut beverage was determined to be 1/3 peanut flour, 1/3 granulated sugar, and 1/3 dry milk
- Fine-milling was a successful method for eliminating grittiness in the instant peanut beverage.

1. Howard, B. M., Y.-C. Hung and K. McWatters. 2010. Analysis of ingredient functionality and formulation optimization of an instant peanut beverage mix. J. Food Sci. 75:S8-S19.

Peanut pancake instant mix

Measured amount of Ingredients

↓

All purpose flour

Light roasted partially defatted peanut flour (12%fat & 28%fat)

Whole egg powder

Milk powder

Salt and Sugar

Baking powder and Baking soda

↓

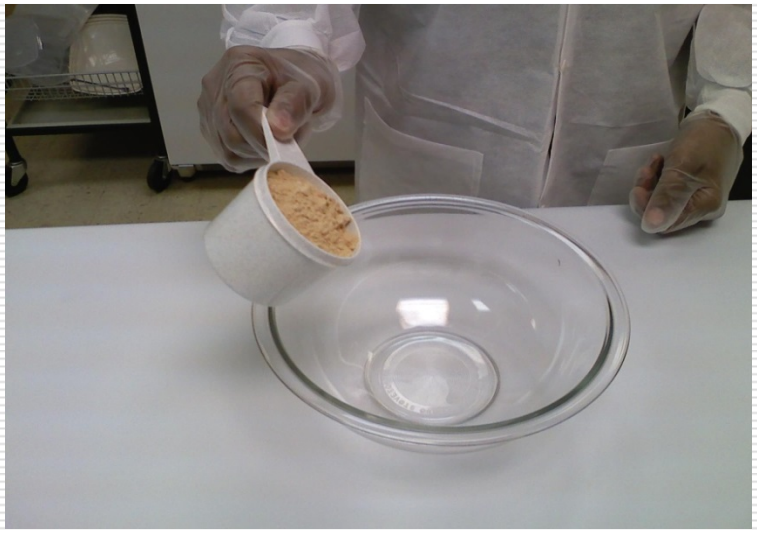
Mix all ingredients together for 2min with a wire whisk

↓

Peanut Pancake Instant Mix

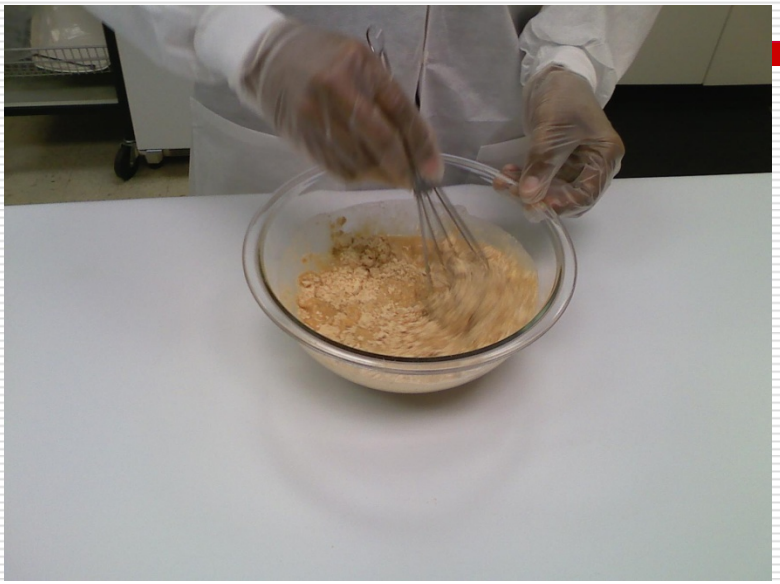
Pancake Preparation Steps

Measuring



Adding Water & Oil

Mixing



Cooking

Peanut Pancakes

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Conclusions

The incorporation of peanut flour in the pancake formulation was found to improve the physicochemical properties of the product

The developed peanut pancake instant mix has shown promise as a convenient and functional breakfast food item to replace regular wheat pancake mix

1. Yemmireddy, V.K., S. Chintagari, and Y.-C. Hung. 2013. Physico-chemical properties of peanut pancakes made from an instant dry mix containing different levels of peanut (Arachis hypogaes) flour. Peanut Science 40:142-148.

Peanut ice cream instant mix

Ice Cream

US market $10 billion (Market Line, 2010)

Production 1.53 billion gallons per year (USDA-NASS, 2011)

Top 5 flavors:

1. Vanilla
2. Chocolate
3. Cookie n' Cream
4. Strawberry
5. Chocolate chip mint

Photo courtesy of fanpop.com

Basic Ingredients

Milk fat
Milk solids not fat
Sugar
Stabilizers/Emulsifiers
Water

Can we improve the nutritional quality with an added variety?

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Peanut ice cream

Measure Dry Ingredients

Sifting Milk Powder

Mixing Dry Ingredients

Stir Dry Ingredients

Add Peanut Flour &Milk Powder to Water

Add Solution into other Dry Mix

Stir Solution

Put in Ice Cream Maker

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Conclusions

- A formulation of peanut ice cream instant mix has been developed successfully
- Quality of peanut ice creams was comparable to the control
- Fat content and degree of roasting affect the physical properties of ice cream
- Creaminess of the peanut ice cream was comparable to the control

Peanut flour commercial examples

Bell Plantation
Powdered peanut butter

Golden Peanut Co.
12% fat, 50% protein
light roasted peanut flour

Golden Peanut Co.
12% fat, organic peanut flour

Peanut Hottie
Instant hot beverage

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Peanut oil

- High smoke point, making it suitable for deep-frying operations
- Low oil absorption during frying
- For high oleic peanut oil, it is very stable to oxidation

A boneless breast of chicken ----, pressure cooked in 100% refined peanut oil ------.

Other opportunity

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