2007 Georgia Peanut Tour

Hot Topics

Development of peanut-based products

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As we all know . . .

- The Peanut is a Powerhouse Of Nutrition

- Healthy Fat
  - No Trans
  - 80% Unsaturated

- Protein and Amino Acids
  - Richest source of Arginine

- Vitamins
  - Folate, Niacin, Riboflavin, Thiamin
  - B6, E

- Minerals
  - Copper to Zinc
..however, peanut composition data are surprisingly sparse: Database values are often based on a handful of analyses.

For that reason UGA food scientists have partnered with the Peanut Institute and the Food Processing Advisory Council (FoodPAC) to conduct intensive analysis of hundreds of peanut and peanut product samples.
Findings from these studies are beginning to be disseminated

2007 Institute of Food Technologists Meeting

Effect of Type and Cultivar on the Proximate Composition of Peanut Kernels Harvested in 2005 in the United States, Phillips, Eitenmiller, Pegg et al.

Comparison of Vitamin E Levels in Runner, Virginia and Spanish Peanuts, Shin, Pegg, Huang, Phillips, Eitenmiller

Folate Content of Runner Peanuts Grown in the Southeastern and Southwestern United States, Kota, Phillips, Pegg, Eitenmiller

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We love our peanut products...
...but sometimes we forget the potential of the peanut as a food ingredient

- Even products with a relatively small level of peanut may add up to large overall utilization

- Consider the soybean…

- Although most people think they taste terrible by themselves, they are in countless food products.
Supported by the USAID CRSP Programs, we ‘modestly’ set out to develop ‘world snacks’ based on peanut and other healthy ingredients.
Street/Snack Foods—New Approach

Conceptualization
- Nutritional Requirements
- Economic Requirements
- Social Requirements

Formulation
- Composition
- Least Cost/Nutrient Optimization Software
- Price

Processing
- Local Commodities
- Extrusion
- Optimized Product

Evaluation
- Physical Properties
- Nutritional Properties
- Sensory Properties

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Snack Product Goals

**Nutrition Goals:**
1. Meet \( \frac{1}{4} \)th of DRI of 9-13 yr old
2. More than one Food group

**Social Goals:**
1. Affordable
2. Promotion of Small Scale industry
3. Safe product

**Price Goals:**
1. Least cost formulation

Target Market:
- Snack Food
- New product
- Street Foods (LDC)
Nutritional Goals - 1/4TH OF DRI

DRI Requirement

- Protein (g) 8.5
- Iron (mg) 2
- Calcium (mg) 325
- Vit A (IU) 500
- Vit C (mg) 11.25
- Fibre (g) 5.75-7
- Sodium (mg) 375-550
- Cholesterol (mg) <300
- Total fat (g) 18.37
- Calories 400-500

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Snack Food Possible Ingredients

1. Cereals (corn, sorghum, millet, rice)
2. Oilseeds (peanut)
3. Starchy legumes (cowpea)
4. Starchy fruits (banana, plantain)
5. Starchy roots and tubers (yam, cassava)
6. Vegetable oil (palm)
Examples of formulations extruded

- Price of the product ingredients = $0.01 to $0.04/100g.

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Comparison between commercial products and CRSP snack

![Graph comparing fat, protein, and carbohydrate content of different snacks. The graph shows the comparison of commercial products such as Corn Puff, Pretzel, Potato Chips, and a UGA Product with CRSP snack. The x-axis represents Fat, Protein, and Carbohydrate, while the y-axis represents the content levels.]
Comparative amino acid profile
EXTRUSION
CONSUMER ACCEPTABILITY

- Mean of 6 formulations including control were compared.
- The formulation were judged for 7 attributes as shown Below:

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<th>SAMPLES</th>
<th>APPEARANCE</th>
<th>COLOR</th>
<th>AROMA</th>
<th>FLAVOR</th>
<th>TEXTURE</th>
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Beyond “Plumpy’Nut®”
Future work

• Very nutrient-dense, easy to consume “Ready to use Therapeutic Foods” for distribution to immunocompromised and other severely malnourished individuals
  – Use of American peanuts and local ingredients
  – Nutritionally Balanced
  – Easy to swallow, probiotics, aflatoxin-binding
E = MC^2

E_{at} = M_{ore peanut produc} C_{ts}^2

E_{at} = M_{ore peanut produc} C_{ts}^2