

Pulse Product Development: Convenient Foods from Pulses.*

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Why This Research Matters

Pulse consumption remains low in many Western countries despite strong nutritional benefits. This project focused on developing convenient pulse-based products that reduce preparation barriers and improve consumer acceptance.

Study Objectives

- Develop consumer-friendly pulse products
- Evaluate acceptance of pulse-based granola flavors
- Develop instant chickpea and lentil cup products
- Identify opportunities for future commercialization

Methods Overview

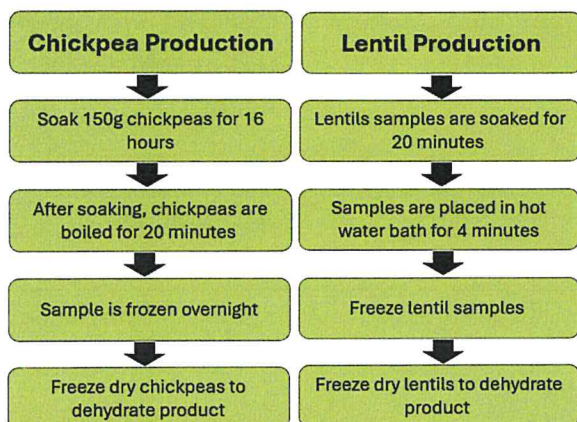
- Pulses used in the development process



Lentil

Chickpea

- **Pulse-based granola products:** Spicy Paprika, Hot Honey, Peanut Butter, and Cinnamon Sugar.
- **Instant chickpea and lentil cups:** Sweet and Spicy (Chickpea); Tangy Chili (Lentil).



Granola Development Highlights

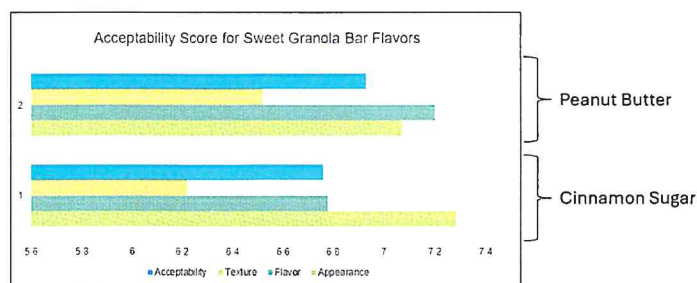
Granola formulations contained at least 60% pulse ingredients. Consumer evaluation (n=81) used a 9-point hedonic scale measuring appearance, flavor, texture, and overall acceptability.

Savory Granola Flavors			
Spicy Paprika		Hot Honey	
Lentil Crisp	60%	Lentil Crisp	60%
Maltodextrin	6%	Brown Rice Syrup	15%
Water	9%	Maltodextrin	6%
Brown Rice Syrup	18%	Water	9%
Onion Powder	1.5%	Sugar	5%
Garlic Powder	1.5%	Nutritional Yeast	2.5%
Paprika	2%	Onion Powder	1%
Garlic / Herb Mix	2%	Smoked Paprika	1%
Total	100%	Garlic Salt	0.5%
		Total	100%

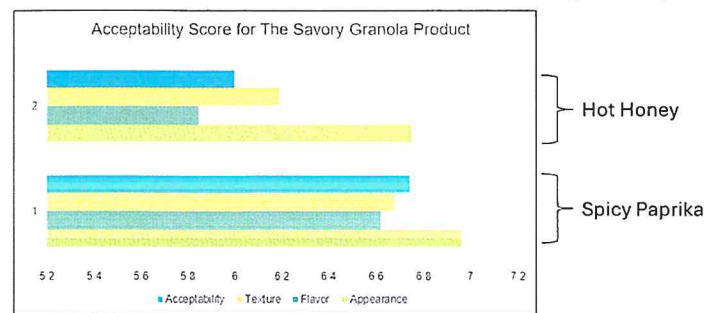
Sweet Granola Flavors			
Cinnamon Sugar		Peanut Butter	
Lentil Crisp	60%	Lentil Crisp	60%
Glucose Syrup	10%	Date Syrup	15%
Date Syrup	5%	Water	8%
Maltodextrin	8%	Peanut Butter Powder	10%
Water	11.5%	Brown Sugar	3%
Cinnamon	1%	Vanilla	3%
Pumpkin Pie Spice	1%	Cinnamon	1%
Salt	0.5%	Total	100%
Brown Sugar	3%		
Total	100%		

Major Findings: Granola

- Sweet granola bars were favored over savory bars.
- No significant differences were observed between Peanut Butter and Cinnamon Sugar flavors.



- Spicy Paprika granola was rate higher than Hot Honey for flavor and acceptability.



Development Highlights Instant Pulse Cup

- The process of parboils combined with freeze drying was effective in creating a product that:
 - Reached stable water activity values: 0.10-0.20
 - Could be rehydrated within 6 minutes
 - Adaptable flavor profiles

Sweet and Spicy (Chickpea):

- Garlic Salt (11.5%)
- Brown Sugar (57%)
- Basil Leaves (8.5%)
- Chili Powder (23%)

Ratio of 20 parts Chickpea to 1 part spice mix

Tangy Chili (Lentil):

- Chili Powder (22%)
- Paprika (22%)
- Salt (40%)
- Cumin Powder (16%)

Ratio of 20 parts Lentil to 1 part spice mix

Major Findings Instant Pulse Cup

- Consumers found both instant products easy to prepare. Just Right scores support the lentil product was closer to consumer idea product. However, chickpea was also rated highly rated.

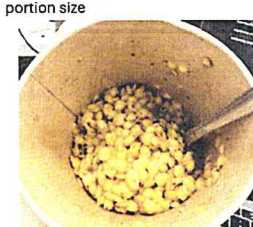
Chickpea Participant Feedback:

- Participants wanted the chickpeas **softer**
- Average **firmness** is just about right
- Participants wanted more **flavor intensity**
- **Intensity of salt** is just right
- 100% of participants considered the instant chickpea product easy to prepare
- 86% of participants would be likely to purchase product a second time
- 100% of participants were satisfied with portion size



Lentil Participant Feedback:

- **Texture** is just about right
- Average **firmness** is just about right
- **Flavor intensity** is just about right
- **Intensity of salt** is just about right
- 100% of participants considered the instant lentil product easy to prepare
- 64% of participants stated they would either likely or definitely buy product a second time
- 64% of participants were satisfied with portion size



Overall Take Home Message:

- Development of familiar, convenient pulse-based foods demonstrates strong potential to increase pulse consumption.
- Consumer feedback supports continued optimization and commercialization of pulse granola and instant pulse cup products.

Product	Key Result
Spicy Paprika Granola	Highest savory acceptance
Peanut Butter Granola	Strong sweet flavor acceptance
Instant Chickpea Cup	Convenience validated; texture refinement needed
Instant Lentil Cup	Positive consumer acceptance

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