



# Comparative studies of OFSP Flour and Puree-based Complementary Foods and its Commercialization

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# Brief Background of study

- Vitamin A deficiency is a public health problem in Ghana
- Most complementary foods in Ghana are cereal-based
- OFSP is being promoted as a more sustainable way of eradicating vitamin A deficiency in Ghana
- Objective: Develop an OFSP-based complementary food and assess its marketability

# Design of the study

<b>Variety</b>	<b>Form used</b>	
	Flour	Puree
<i>Apomuden</i>		
<i>Bohye</i>		

- Food blend (Sweetpotato, millet and soybean)
  - Sweetpotato (50-60%)
  - Millet (10-15%)
  - Soybean (25-35%)
- Formulations generated by mixture design (Statgraphics Centurion)

Table 1: Sample formulation for sweetpotato flour

<b>Runs</b>	<b>Flour compositions (%)</b>			<b>Other ingredients (g/100g of flour sample)</b>		
	<b>Sweetpotato flour</b>	<b>Millet flour</b>	<b>Soyabean flour</b>	<b>Sugar</b>	<b>Salt</b>	<b>Powdered milk</b>
1	60	10	30	5	0.5	5
2	60	15	25	5	0.5	5
3	50	15	35	5	0.5	5
4	55	10	35	5	0.5	5

Flour/puree from OFSP



+

Flour from Millet



+

Flour from Soybean



**Kneading**  
For 2.5kg of flour blend  
Water content = 2.37 L  
(95%)



**Drum drying**  
Pressure of steam 2.5bar  
Temperature of steam = 126.9°C  
Drum rotation speed = 0.1911 rev/min



**Milling of dried samples into flour**

Sensory evaluation  
Proximate and mineral  
B-carotene  
Market survey (200 nursing mothers)

Figure 1: Development of the complementary food

# Main findings

- Most preferred formulation
  - **OFSP flour**
    - *Bohye*
    - 50% OFSP, 15% Millet and 35% Soybean flours
  - **OFSP puree**
    - *Bohye*
    - 50% OFSP, 15% Millet and 35% Soybean flour
  - *Apomuden*
    - 60% OFSP, 10% Millet and 35% Soybean flour

# Findings...

**Table 2: Proximate composition of the complementary foods**

Proximate Composition	Complementary Foods		
	<i>Bohye</i> (puree)	<i>Apomuden</i> (puree)	<i>Bohye</i> (flour)
Moisture (%)	7.50 ± 0.71	8.00 ± 1.41	6.47 0.12
Ash (%)	4.67 ± 0.00	4.50 ± 0.24	2.71 0.03
Protein (%)	17.60 ± 0.35	16.26 ± 0.35	16.96 0.60
Fat (%)	9.62 ± 0.28	9.01 ± 0.24	6.20 0.44
Fibre (%)	0.84 ± 0.28	1.46 ± 0.85	1.70 0.07
Carbohydrate (%)	59.62 ± 0.90	60.76 ± 1.91	65.95 0.87

# Findings...

**Table 3: Mineral composition of the complementary foods**

Complementary foods	Minerals (mg/100g)		
	<i>Potassium</i>	<i>Iron</i>	<i>Zinc</i>
<i>Bohye</i> (puree)	126 ± 3.20	1.53 ± 0.09	0.13 0.00
<i>Apomuden</i> (puree)	115 ± 4.60	1.32 ± 0.04	0.12 0.09
<i>Bohye</i> (flour)	56.87 ± 1.11	1.95 ± 0.06	0.89 0.04
RDI (mg/day)	60 – 160	1.70 – 11	2 – 3

RDI – Recommended Daily intake (Koletzko *et al.*, 2008)



# Findings...

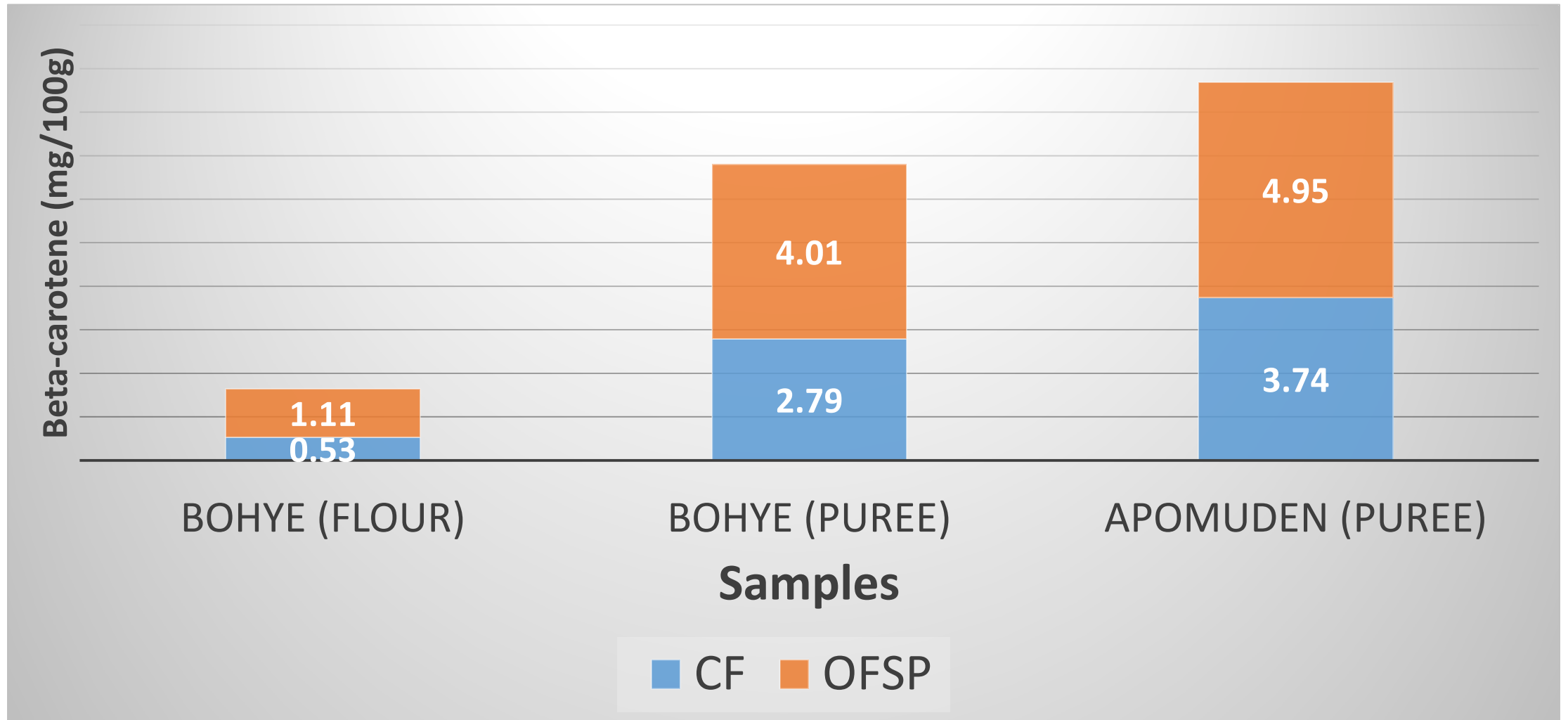


Fig 2: Beta-carotene content of the complementary foods

# Highlights of findings from market survey

- From 200 nursing mothers across 4 major hospitals
  - Factors in choosing complementary foods
    - Nutrient content
    - General appearance
    - Price
  - Limited knowledge on sweetpotato-based complementary food
  - 62%, willing to pay >15 Ghana cedis (3.36 USD) for 400 g of the OFSP complementary food, branded “Sweepolac”

# Challenges...

- Established food companies not interested
  - Already existing products providing them sufficient income
  - R n D (faster than academia)
  - Economically viable products (issues with raw materials)
- Upcoming Entrepreneurs unable to reach an agreement with the University
- Solution: Small-scale production of selected products by research institution to attract entrepreneurs

# Conclusion

- OFSP puree-based complementary food has relatively higher  $\beta$ -carotene content than that of OFSP flour
- Consumers are willing to purchase the product
- Small-scale production in the research institute may be the best promotion option

# Appreciation

- DANIDA Roots and Tuber Project: Strengthening Roots and Tuber Value Chains in Ghana

# Thank you



**Watch out for *Sweepolac***