

FOOD FORTIFICATION CHAIR

Members

Chair: Prof. Dr. Muazzam Rafiq Khan

Co-chair: Prof. Dr. M. Asim Shabbir

Research Associate: Dr. Roshina Rabail

Research Assistant: Mr. M. Abdullah Butt



Domains of Food Fortification

01

Development of food fortification technologies

02

Development of fortified & functional food products with multifarious fortificants

03

Development of composite flours and different multi-mixes

GOALS/OBJECTIVES

- Sustainable model of food fortification for;
 - ❑ Flour mills
 - ❑ Oil and fat processing units
 - ❑ Fruit and vegetable post-harvest units
 - ❑ Other food production industries
- To improve the health and nutritional status of vulnerable population
- To spread awareness and knowledge of fortified foods consumption
- Promotion of small enterprise and own business for fortified foods



Food Fortification Chair Work Plan



SMART INDICATORS								
Major Project Goals/Target Areas	Quantifiable Indicators	Baseline	Year-Wise Target				Total	Cumulative since year 1
			Year-1	Year-2	Year-3	Year-4		
Food Fortification	No. of Fortification Technologies developed/commercialized	2	1	3	3	-	7	7
	No. of Fortified & Functional Food Products developed/optimized Fortificant doses (Zn, Fe, Ca, Vitamin A, Vitamin D)	10	4	10	12	4	30	26
	Composite Flour and Food Multi-Mixes developed	5	2	6	8	2	18	16

Food Fortification Targets (Year 1) (2022-23)

Achieved

Fortification Chair Report (Year 1)

Sr #	Criteria	Number	Year 1 PC-1 Targets (2022-2023)	Status
1	Fortification Technologies	01	1. Iron premix	Done
2	Fortified & Functional Products (Major focus is given to Iron, Zinc, Calcium, Vitamin A and Vitamin D)	04	1. Calcium fortified Mayonnaise 2. Calcium Fortification of Rice flour in DOSA 3. Chia (<i>Salvia hispanica</i>) Fortification in Apple Jam (Apple Chia Jam) 4. Tamarind Sauce Fortification with Moringa Powder	Done
3	Composite Flour and Food Multi-Mixes (Major focus is given to Iron, Zinc, Calcium, Vitamin A and Vitamin D)	02	1. Spinach Powder and Quinoa flour (Iron Pro Flour) 2. Healthy Sattu Premix	Done

Achieved Targets Year-I



Iron Pro-Flour

- 1 Serving = 2 mg (2% Iron RDA)
- **Target Group:**
- Iron Deficient Pregnant Women and Children



Healthy Sattu Premix

- **Target Group:** All Population



Apple Chia Jam

- **Target Group:** All Population



Iron premix

- **Tech:** *Dusting & *Mixing
- 1 Packet (100 gm) = 25% DV Fe ~ 1 Tsp. (5 gm) = 4.5 mg elemental Iron
- **Target Group:** Iron deficient Population



Calcium Fortified Mayonnaise

- 1 Serving (2 Tbsp.) = 200 mg Ca (20% RDA)
- **Target Group:** Ca Deficient Population



Calcium Fortified Rice Dosa

- 1 Serving = 200 mg Ca (20% RDA)
- **Target Group:** Ca Deficient Population

Food Fortification Targets (Year 2) (2023-24)

Achieved

Fortification Chair Report (Year 2)

Sr #	Criteria	Number	Year 2 PC-1 Targets (2023-2024)	Status
1	Fortification Technologies	03	<ol style="list-style-type: none"> 1. Iron and zinc-fortified Iodized salt 2. Vitamin A premix 3. Vitamin A & D fortified pickle 	Done
2	Fortified & Functional Products (Major focus is given to Iron, Zinc, Calcium, Vitamin A and Vitamin D)	10	<ol style="list-style-type: none"> 1. Calcium Premix 2. Zinc fortified spices 3. Zinc fortified apricot sauce 4. Zinc fortified tamarind sauce 5. Vitamin A & D fortified mayonnaise 6. Vitamin A fortified orange flavored gummies 7. Iron fortified sweet potato jam 8. Coconut milk cheese fortified with iron 9. Imitation Meat Nuggets 10. Strawberry Date Leather Supplemented with Moringa 	Done
3	Composite Flour and Food Multi-Mixes (Major focus is given to Iron, Zinc, Calcium, Vitamin A and Vitamin D)	06	<ol style="list-style-type: none"> 1. Composite flour based multigrain pasta 2. Composite flour based frozen paratha 3. Flaxseed Date Multi-mix 4. Eggplant multi-mix for bakery 5. Vitamin A fortified amaranth and mung beans flour noodles 6. Calci-mix flour for chapatti 	Done

Achieved Targets Year-II



Iron and zinc-fortified Iodized salt

- **Technology:** *Dusting & *Mixing
- 1 Tsp. = 6 mg Iron & Zn (30-50 % RDA)
- **Target Group:** Iron and Zinc Deficient People



Vitamin A premix

- **Technology:**
 - *Homogenization
 - *Emulsification
- 1 mL = 50,000 µg
- **Target Group:** Vitamin A Deficient Population



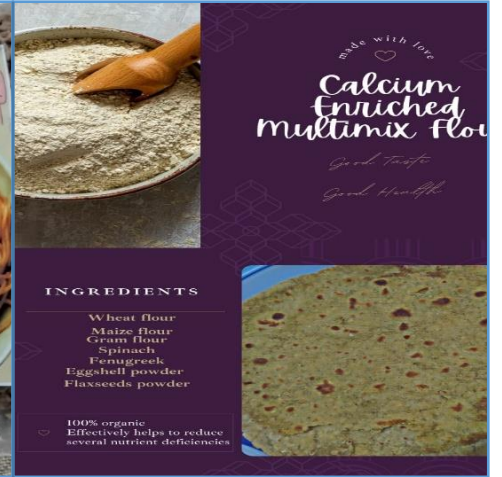
Vitamin A & D fortified pickle

- **Technology:**
 - *Homogenization
 - *Emulsification
- 15 gm = 600µg Vit.A & 20µg Vit.D
- **Target:** Vitamin A and D deficient Population



Vitamin A fortified amaranth and mung beans flour noodles

- 100 gm = 300 µg (25% RDA)
- **Target Group:** All Population with Vitamin A deficiency



Calci-mix flour for chapatti

- Target Group:** Adults and Children with Calcium deficiency or Increased Ca Needs

Achieved Targets Year-II



Zinc fortified spices

- (Red chili, coriander and turmeric powder)
- 1 Tsp. = 4 mg Zn (10% RDA)
- **Target:** Zinc-deficient people



Zinc fortified apricot sauce

- 100 gm = 15% RDA
- **Target Group:** Zinc-deficient population



Zinc fortified tamarind sauce

- 100 gm = 15% RDA
- **Target Group:** Zinc-deficient population



Vitamin A & D fortified mayonnaise

Target Group: All Population with Vitamin A deficiency



Flaxseed Date Multi-mix

- **Target Group:** All Population



Iron fortified sweet potato jam

- 1 Tbsp. = 1 mg (8% RDA)
- **Target Group:** Iron deficient People especially Pregnant Women and Children

Food Fortification Targets (Year 3) (2024-25)

Achieved

Fortification Chair Report for Year 3 (2024-2025)

Sr #	Criteria	Number	Year 3 PC-1 Targets (2024-2025)	Status
1	Fortification Technologies	03	<ol style="list-style-type: none"> 1. Iron fortified rice by soaking technique 2. Iron fortified rice through spraying technique 3. Vitamin D Fortified Soy cheese 	Completed
2	Fortified & Functional Products (Major focus is given to Iron, Zinc, Calcium, Vitamin A and Vitamin D)	12	<ol style="list-style-type: none"> 1. Vit. D3 & Ca fortified Chocolate Spread 2. Vit. D3 & Ca fortified Peanut butter 3. Moringa supplemented Cherry date Fruit leather 4. Vit. D & Omega 3 fortified Chocolate spread 5. Moringa Supplemented Chicken nuggets 6. Vit. D & Ca. fortified tahini 7. Dietary fiber enriched functional drink 8. Sesame sweet balls 9. Ca & Vitamin D fortified mayonnaise 10. Vit A-fortified rice noodles stabilized with vitamin E 11. Iron Fortification in Mix Fruit Jam 12. Mori-D Snacks 	Completed
3	Composite Flour and Food Multi-Mixes (Major focus is given to Iron, Zinc, Calcium, Vitamin A and Vitamin D)	08	<ol style="list-style-type: none"> 1. Iron fortified Composite flour Pancake premix 2. Calcium fortified Rice Dosa Premix Dry Version 3. Foxnut Fortified Bakery Multimix 4. Calcium fortified composite flour 5. Missi roti multimix 6. Multigrain Crackers Enriched with poppy seeds 7. Multicereal flour for chappati 8. Blended Oil 	Completed

Achieved Targets Year-III



Iron Fortification of Rice kernels through Spraying Technique

- **Technology:**
*Spraying Mist
- **Target Group:** Iron-deficient People



Iron Fortification of Rice by Soaking Technique

- **Technology:**
*Soaking
- **Target Group:** Iron deficient People



Vitamin D Fortified Soy cheese

- **Technology:**
*Fermentation
- **Target:** Vitamin D deficient & Lactose Intolerant People



Calcium Fortified Rice Dosa Premix (Dry Version)

- 100 gm = 250 mg (25% RDA)
- **Target Group:** Calcium deficient people



Iron Fortified Composite Flour Pancake Premix

- 30 gm (1 pancake) = 2.5 mg (15% RDA)
- **Target Group:** Iron deficient children & women



Foxtail Fortified Bakery Multimix

- **Target Group:** All Population especially growing children

Achieved Targets Year-III



Missi Roti Premix

- **Target Group:** All Population



Vit. D & Calcium Fortified Tahini

- 1 Tbsp. = 500 mg Ca & 400 IU Vit. D (40-50 % RDA)
- **Target Group:** Population with Can & Vit. D deficiency



Vit. D & Calcium Fortified Chocolate Spread

- 1 Tbsp. = 250 mg Ca & 600 IU Vit. D (25 & 75% RDA)
- **Target Group:** Population with Can & Vit. D deficiency



Vit. D & Calcium Fortified Peanut Butter

- 1 Tbsp. = 250 mg Ca & 600 IU Vit. D (25 & 75% RDA)
- **Target Group:** Population with Ca & Vit. D deficiency



Vit. D & Omega-3 Fortified Chocolate Spread

- 1 Tbsp. = 280 mg ALA, & 600 IU Vit. D
- **Target Group:** Population with Ca & Vit. D deficiency



Moringa Supplemented Chicken Meat Nuggets

- **Target Group:** All Population

Achieved Targets Year-III



Moringa supplemented Cherry Date Leather

- **Target Group:** All Population



Ca & Vitamin D fortified mayonnaise

- 15 gm = 600µg Vit.A & 20µg Vit.D
- **Target Group:** All Population with Vitamin A & D deficiency



Multigrain Crackers Enriched with poppy seeds

- **Target Group:** All Population



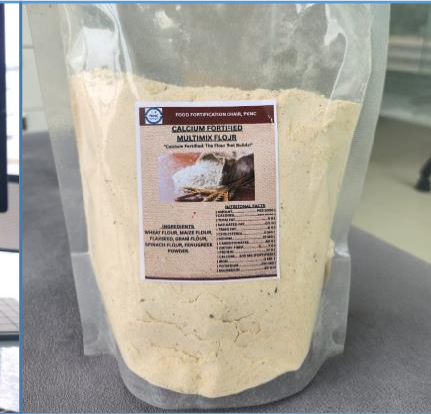
Iron Fortification in Mix Fruit Jam

- 1 Tbsp. = 1 mg (8% RDA)
- **Target Groups:** Iron deficient People especially Pregnant Women and Children



Blended Oil (CardiOil)

- **Target Group:** All Population



Calcium fortified composite flour

100 gm = 250 mg (25% RDA)

- **Target Group:** Population with increased Calcium needs (children & elderly)

Food Fortification Targets (Year 4) (2025-26)

Work Under Process

Fortification Chair Report (Year 4)



Sr #	Criteria	Number	Year 1 PC-1 Targets (2022-2023)	Status
1	Fortification Technologies	0	-	-
2	Fortified & Functional Products (Major focus is given to Iron, Zinc, Calcium, Vitamin A and Vitamin D)	04	<ol style="list-style-type: none"> 1. CalciLotus (Calcium Fortified Lotus Spread) 2. Iron Fortified Jelly Premix 3. Iron Fortified Tomato Ketchup 4. Zinc & Fiber Fortified Tea 	Under Process
3	Composite Flour and Food Multi-Mixes (Major focus is given to Iron, Zinc, Calcium, Vitamin A and Vitamin D)	02	<ol style="list-style-type: none"> 1. AlsiVita (Intant Pinni Premix) 2. SmartStart Muesli (Breakfast Cereal Premix) 	Under Process

Achieved Targets Year-IV



Vita™ – Instant Pinni Premix

AlsiVita (Instant Pinni Premix)

Target Group: All Population



CalciLotus (Calcium Fortified Lotus Spread)

15 gm = 25% DV Calcium

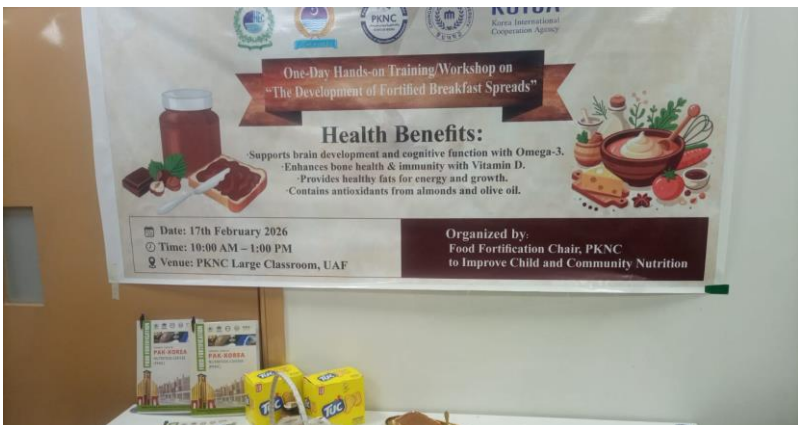
Target Group: All Population with Ca deficiency





PKNC UAF is with Muhammad Randhawa and University of Agriculture Faisalabad - Official.
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PKNC UAF continues to strengthen its role as a catalyst for community nutrition wellbeing through impactful capacity-building initiatives under the visionary leader... See more



One Day Hands-on Training Workshop on "The Development of Fortified Breakfast Spreads" Dated: 17th Feb. 2026

Sustainability Plan

Food Fortification Chair

Pak-Korea Nutrition Center (PKNC)

Vision

To establish a financially sustainable and impactful **Food Fortification Chair** at the **Pak-Korea Nutrition Center (PKNC)**

To develop and promotion the **accessibility of fortified, functional, and multimixed foods** to address micronutrient deficiencies.

Mission

To drive innovation and research-based development of fortified & functional food products

To create public awareness about their health benefits

To establish accessible distribution channels

To generate revenue for the long-term sustainability

Key Sustainability Focus Areas

Public Awareness & Demand Generation:

- Health camps, seminars, media outreach, and advocacy events.
- **KPIs:** Outreach, social media engagement, and seminar attendance.

R&D Facility Establishment:

- Develop a dedicated lab for food formulation and enhancement.
- **KPIs:** Lab space approval, equipment procurement, and lab operationalization.

Sales Outlet, Workforce & Seed Money

1. Sales Outlet & Marketing Space:

1. Set up a PKNC outlet to distribute fortified foods.
2. **KPIs:** Outlet establishment, sales volume, customer satisfaction.

2. Workforce & Labor Requirement:

1. Hire workers for procurement, production, packaging, and distribution
2. **KPIs:** Workforce hiring, training, and transportation facilities.

3. Seed Money Request:

1. Secure funds for equipment, raw materials, and product development.
2. **KPIs:** Seed money approval, procurement of materials.

Business Plan & Estimated Costs

Business Plan Summary:

- **Target Market:** General population (focus on vulnerable groups).
- **Products:** Fortified staples (flour, oil), multimixed foods.
- **Revenue:** Sales, cost recovery, and grants.

Estimated Costs:

- **Seed Money:** Approx. PKR 10,000,000 for equipment and raw materials.
- **Other Costs:** Infrastructure, workforce, marketing, and operational setup costs. (Detailed budget attached in the full proposal).