

## Nano Fortification of Flour for The Effective Management of Nutritional Deficiencies

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### INTRODUCTION & AIM

#### >> FOOD FORTIFICATION

Fortification of food, also known as food enrichment, involves the addition of nutrients to food. The basic aim of this addition is to address nutrient deficiencies in large segments of the population.



Voluntary fortification *allows* food manufacturers to add vitamins / minerals/both to foods

Mandatory fortification *requires* food manufacturers to add certain vitamins / minerals / both, to specified foods to address a significant public health need

Studies suggest that more than 50% of women over 50 in the country suffer from low bone mass

#### PROPOSED CONCEPT

Include calcium along with iron and folic acid

#### CHALLENGE

**Bioavailability and Stability issues**

**Needs to be resolved**



### METHOD

Nano calcium oxide

Electrolytic iron

Folic acid

*Blending*

Low extraction Flour

Evaluation of fortified flour

- Nutritional value (Analytical techniques)
- Stability testing (Physical and chemical stability)
- Sensory evaluation (Organoleptic properties)
- Intestinal bioavailability

### RESULTS & DISCUSSION

#### Benefits

**Safety**

**Technological compatibility**

**Final cost**

Ingredients-safe and FDA approved

Compatibility of the added nutrients

Fortified flour can be manufactured using existing technologies

#### Requirements For a Fortified product

**No unacceptable sensory changes**

**Physical and chemical stability even during long term storage**

**Stable during baking / any other cooking procedure**

**Cost effective**

**Simple processing**

### CONCLUSION

Edible flours blended with this nutrient premix can be used in the preparation of bread, flat bread/ rotis or any other dishes as per the food habits of various consumers.

### FUTURE WORK / REFERENCES

- 1.ICMR-NIN Expert Group on Nutrient Requirement for Indians, Recommended Dietary Allowances (RDA) and Estimated Average Requirements (EAR) - 2020.
- 2.www.fssai.gov.in. Food Safety and Standards (Fortification of Foods) Regulations- 2018;