



**FNH 490**

# Home Fortification Heroes - Helping Defeat Micronutrient Deficiencies

*Super Sprinkles, Nocturnal Nutributter, Flaming Nutritabs*

# **Class Agenda**

1. Introduction & Background Information
2. PowerPoint Presentation
3. Video
4. Pyramid Game
5. Discussion
6. Conclusion & Questions

# Introduction

## „Fighting malnutrition one step at a time...”

- Comparing the efficacy and acceptability of Sprinkles, crushable Nutritabs and Nutributter as agents of home fortification

### Advantages:

1. No changes made to original diet
2. Child can get a full dose of micronutrients
3. Is more accepted than medicinal forms of iron and
4. Is cheaper than ready fortified foods



# **Social & Cultural Dimensions**

- Culturally accepted ingredients and local flavours & smells
- Packaging should be socially and culturally acceptable i.e. Red cheeks on baby (sprinkles)
- Price should be within the range of what mothers are able to pay
- Proper education on efficacy and utilization
- Regular follow-up
- Suitable to both the literate and illiterate
- Can be used by different religious groups



# Nutritabs (NT)

aka Foodlet

## Product Information

- Flavored multiple-micronutrient vehicle that is a hybrid of a food and tablet
- Created for infant-toddler RDA for selected vitamins and minerals
- Chewable or dissolvable and mixed with complementary foods or fluids for children 6-24 months
- Contains vitamins A, D, E, K, C, B1, B2, Niacin, B6, B12, folate, and iron, zinc, copper and iodine (Foodlets contain 10 mg of iron as ferrous fumarate)

# Nutritabs (NT) aka Foodlet

- Packaged into blister packs, shelf life of 24 months
- Cost: \$0.035/tablet
- Efficacy: Nutritabs effective in providing adequate levels of iron to young children when taken on their own or mixed with locally used complementary foods

# Nutritabs (NT)

## Benefits to the Region(s)

- Examine infants in rural South Africa, Indonesia, Vietnam and Peru to assess efficacy of MM supplement for improving micronutrient, anemia, growth, and morbidity status

- Anemia and VAD affecting at least 30% of preschool children

4 treatments: DMM, WMM, DI, P



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- Complementary foods deficient in micronutrients
  - MM Supplements improve child development beyond growth

## **Results**

- DMM -positive impact on weight growth
- -most effective for improving iron status and reduction of anemia
- No difference in length grown

# Nutributter (NB)

## Product Information



- Lipid-based nutrient supplement for young children 6-24 months
- Complements home-made food to aid with cognitive development and growth
- Made of peanuts, sugar, a blend of vegetable oil, skimmed milk powder, maltodextrin and whey
- Nutributter contains iron in the form ferrous sulfate (similar to NT)

<http://www.youtube.com/watch?v=cMNPnmY3sq0>

# Nutributter (NB)

## Benefits to the Region(s)

- A 2004-06 Nutributter trial in Ghana reduced childhood anemia and growth stunting
- Infants showed greater weight and height gain than those taking other supplements
- Amount mothers would spend on Nutributter was much higher than for SP and NT
- Doubled the number of infants who could walk at age 1



# SPRINKLES

## Product Information



- Sachets containing a blend of micronutrients in powder form
- Sprinkled onto foods prepared in the home
- Prevent and treat micronutrient deficiencies that are most prevalent in children
- 0.015 – 0.035 USD/ sachet depending on volume and production site



### Composition of Nutritional Anemia Formulation Sprinkles:

| Micronutrient     | Amount           |
|-------------------|------------------|
| <b>Iron</b>       | <i>12.5 mg</i>   |
| <b>Zinc</b>       | <i>5 mg</i>      |
| <b>Folic Acid</b> | <i>160 µg</i>    |
| <b>Vitamin A</b>  | <i>300 µg RE</i> |
| <b>Vitamin C</b>  | <i>30 mg</i>     |

### Composition of Multi-Micronutrient Formulation Sprinkles:

| Micronutrient      | Amount           |
|--------------------|------------------|
| <b>Vitamin A</b>   | <i>400 µg RE</i> |
| <b>Vitamin C</b>   | <i>30 mg</i>     |
| <b>Vitamin D</b>   | <i>5 µg</i>      |
| <b>Vitamin E</b>   | <i>5 mg α-TE</i> |
| <b>Vitamin B1</b>  | <i>0.5 mg</i>    |
| <b>Vitamin B2</b>  | <i>0.5 mg</i>    |
| <b>Vitamin B6</b>  | <i>0.5 mg</i>    |
| <b>Vitamin B12</b> | <i>0.9 µg</i>    |
| <b>Folic Acid</b>  | <i>150 µg</i>    |
| <b>Niacin</b>      | <i>6 mg</i>      |
| <b>Iron</b>        | <i>12.5 mg</i>   |
| <b>Zinc</b>        | <i>4.1 mg</i>    |
| <b>Copper</b>      | <i>0.56 mg</i>   |
| <b>Iodine</b>      | <i>90 µg</i>     |

# SPRINKLES

## Product Information

### Bioavailability

- Encapsulation of the iron;
  - Masks metallic taste and reduces GI discomfort
  - Prevents interaction with other nutrients
- Sprinkles can get lost if mixed with fluids



# SPRINKLES

- **REGULATIONS:**
- The home fortification regimen:
  - 60 single-dose sachets per child, consumed over 60 to 120 days
  - Maximum 1 sachet/day per child
  - Repeat every 6 months
- Proven results with this regimen:
  - Maintains a child's hemoglobin levels above the cut-off for anemia
  - Helps prevent recurrence of anemia
- Who should **not** use Sprinkles?
  - In regions with high rates of malaria



# SPRINKLES

## Improvements

- 1. Sprinkles cannot be mixed with foods hotter than 60°C - food will darken and have an off-taste
- Solution: Improve the chemical properties of the lipid layer around the iron to improve its stability
- 2. Some mothers think Sprinkles are not suitable for their children (Indonesia reading)

# Benefits to the Region(s)

- Worldwide programs of Sprinkles: Canada, China, Bangladesh, India and Pakistan, Ghana, Bolivia and Haiti
- Reading: *'Home fortification in emergency response: Experiences in Aceh and Nias, Indonesia'*
  - 28 million sachets delivered to over 200,000 children
  - 95% of mothers recognized the Sprinkles packages
  - Anemia rates decreased by 25%
  - Prevalence of diarrhea decreased by 40%



# Political, Economic & Ethical Concerns

- Eliminating ethical concerns related to control groups
  - Researchers must ensure that control and treatment groups benefit equally
- Government is the key stakeholder in social marketing and distribution
- Prevention and treatment of malnutrition should be the primary goals (no political agendas)

# Canadian 'Home Fortificants'

## Hemp Hearts

- ½ oil and 1/3 protein
- Promotes cellular health and energy
- Recommended amount: 5 tbsp/day
- High in omega 3 and 6 essential fatty acids
- Rare & expensive



## Wheat Germ

- Natural supplement
- Good source of B vitamins, calcium, fiber, iron, magnesium, manganese, omega 3 fatty acids, and zinc
- High in vitamin E, an antioxidant which promotes healthy skin and anti-aging
- Lowers cholesterol and blood pressure

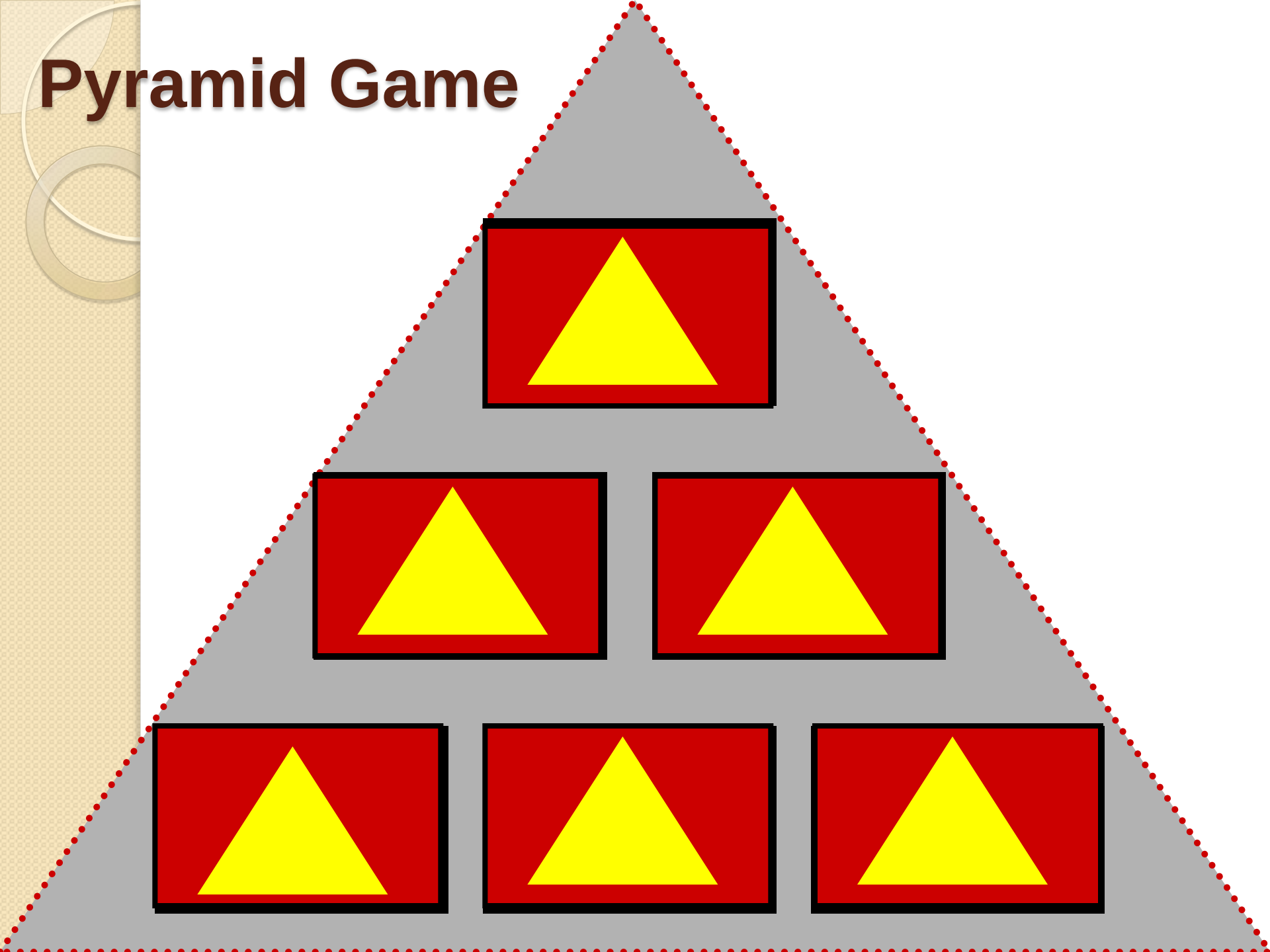


## Flax Seed

- Excellent source of omega-3 and good source of dietary fiber, Mn, folate, vitamin B6, Mg, P, Cu
- High in lignans and ALA fatty acids which help with inflammatory diseases, heart health, cancer, diabetes and bone health
- In cereal, baking, shake, and vegetables



# Pyramid Game



# Discussion & Questions

1. Do you think it would be important to put initiatives in place to tackle micronutrient deficiencies in adults? Do you think this would be necessary? Why or why not?
2. Should future efforts be focused on fortifying their staple foods or finding more effective ways of home fortification?



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