Nutri-candy

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Presentation Outline

- Product Description
  - Product Description/use
  - Product Formulation
  - Nutrient Bioavailability and its Interactions
  - Package, storage, shelf life, and price/cost

- Safety
  - Hazard Analysis
  - Home Usage

- Impacts
  - Culture Appropriateness
### Product Background: India's country profile

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>1,168,714,600</td>
</tr>
<tr>
<td>Children-under-5 mortality rate</td>
<td>79 per 1000</td>
</tr>
<tr>
<td>Vitamin A deficiency, in children 6 to 59 months old</td>
<td>57%</td>
</tr>
<tr>
<td>Iodine deficiency</td>
<td>33%</td>
</tr>
<tr>
<td>Prevalence of anemia, in children 6 to 59 months old</td>
<td>69%</td>
</tr>
<tr>
<td>Prevalence of anemia, in women</td>
<td>62%</td>
</tr>
</tbody>
</table>
Nutri-candy is a hard-boiled candy developed by the Micronutrient Initiative. The candy is fortified with multiple micronutrients, which are vitamin A and C, folic acid, and Iron.
Product Description/use

Target region: India
Target population: 2-6 yr old children, adolescent girls, pregnant and lactating women

Objectives:
- to improve micronutrient status in the target population
- to promote the attendance of beneficiaries at the supplementary feeding centres
Product Formulation

prepare the ingredients (sucrose, citric acids, and fortificants)

↓

mix together the ingredients

↓

boil the mixture until the desired temperature has been reached (160°C)

↓

cool

↓

shape

↓

pack
Nutrient Bioavailability and its Interactions:

<table>
<thead>
<tr>
<th>Nutrients</th>
<th>Levels per 3 gram lozenge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>500 IU</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>10 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>50 mcg</td>
</tr>
<tr>
<td>Iron</td>
<td>7 mg</td>
</tr>
</tbody>
</table>
Nutrient Bioavailability and its Interactions:

- Vitamin A: inadequate bioavailability
- Iron: affected by diets
  - Phytates ↓ iron bioavailability by binding to iron to form insoluble complexes
  - Phenolic compounds:
- Vitamin C: ↑ non-haem iron absorption from foods
- Folic acid: not readily available in cereal-based diets
Package, storage, shelf life, and price/cost

- **Storage**: avoid contact with sunlight or heat.
- **Packaging**: high density poly-ethylene bags which can withstand higher temperatures
- **Nutri-candy** has a shelf life of at least 6 months
- **Cost**: 0.4 cents of USD/candy
Hazard Analysis

Two important properties of hard-candies:

- Clarity or transparency for attraction
- A minimal tendency to absorb water from the air
  - Difficulty in separating candy & wrapper
  - Dental caries
Home use:

Safety hazards:

- tooth decay or dental caries

Solution: children should only receive 1 candy/day and be educated with proper oral hygiene

- toxicity effects: highly unlikely
Culture Appropriateness

- India: emphasize on home/family cooking using traditional and fresh ingredients.

- Fortification of centrally processed foods: may not be as effective.

- No changes in diets or lifestyle.
Thank You
References:

References


