Winfood data from Kenya and Cambodia: constraints on field procedures

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Background

• Nutrition quality of foods fed to infants is critical during the transition when other foods are introduced to complement breast milk

• Cereal based gruels predominantly used in resource constrained settings do not meet nutrition requirements for rapid growth and development

• Animal source foods are seldom used due to high cost

• Indigenous animal source foods such as edible insects and small fish species may be utilized to provide high quality protein and more bioavailable nutrients
WINFOOD PROJECT

• WINFOOD is a Danida funded project

• Overall aim: Alleviating infants malnutrition by improved utilisation of traditional foods”

Specific objectives

➢ Formulate nutritious foods based on small fish and edible insects; test palatability and acceptability

➢ Assess efficacy of developed foods on infant growth, lean mass accrual and development in a randomized controlled trial
Product Development and Acceptability in Kenya


• Konyole SO et al. 2012. Acceptability of Amaranth Grain-based Nutritious Complementary Foods with Dagaa Fish (Rastrineobola argentea) and Edible Termites (Macrotermes subhylanus) ... in Western Kenya. J Food Res. 1 (3): 111-120.


Amaranth grain based Ready to Use Complementary Food (WinFood)

Amaranth grain

Termite (10%)

WINFOOD

Maize

26 May 2014

Dagaa fish
Figure 1: Flow diagram for processing of complementary foods

Germinated amaranth grain (72h) → Sorting → Coarse milling (2.0 mm mesh size) → Mixing → Extrusion cooking → Pin milling (0.8 mm mesh size) → Packaging & labelling (PET jars)

Maize → Sorting → Sorting & washing → Blanching (1 minute, 95°C) → Oven drying (1 hr, 120°C) → Cooling (1 hr) → Mixing → Extrusion cooking

Dagaa fish → Sorting & washing → Blanching (1 minute, 95°C) → Oven drying (1 hr, 120°C) → Cooling (1 hr) → Mixing → Extrusion cooking

Termite → Sorting & washing → Oven drying (1 hr, 120°C) → Cooling (1 hr)
RCT PACKAGING

26 May 2014
Screened n=527

Excluded/Declined n=55

WC N=165
  Defaulted = 24
  Relocated = 21
  Died = 3
  Analyzed = 141

Randomized n=449

WL N=167
  Defaulted = 30
  Relocated = 27
  Died = 3
  Analyzed = 137

CSB+ N=167
  Defaulted = 17
  Relocated = 15
  Died = 2
  Analyzed = 150
Table 2: Details of baseline and follow-up examinations in intervention study

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Methodological challenges
Logistics and Randomisation and follow up

- Treatment foods (ingredient procurement, food production, maintenance of field stock, shelf life)
- Ingredient procurement – termites, spiders, fish quality, premix
- Organoleptic and processing modifications – in Kenya fish flavor reduced acceptance while in Cambodia it enhanced
- Addition of termites made it difficult to extrude and mill blend
- **Randomization** (difficulty in blinding; mothers share experiences among themselves)
- **Follow up** (drop outs, vast and rough terrain, travel by participants)
Deuterium oxide issues

- Mothers do not understand at first and lots of explanation needed
- Difficulty in maintaining cold chain in transport and storage
- Spillages during dosing due to stubborn children
- Sample labeling
- Presence of only one FTIR machine means only authorized staff can access lab and so difficult for study team to assess on-going sample analysis
Primary Outcome: Increment in fat-free body mass – using stable isotope method.
Blood issues

- Nervous mothers and irritable infants
- Inexperienced blood staff; need for instant refresher training; meaning inability to collect samples from all subjects
- Hemolysis, too little sample to separate into serum
- Lack of capacity to analyze samples locally (hematological indicators and blood lipid profile)
Conclusion - Challenges

• Challenges largely contextual.

• Misconceptions about intervention and procedures,

• Infant morbidity and restlessness affected $D_2O$ assessment.

• Inexperienced staff and lack of local sample analysis capacity affected blood assays.

• Local laboratory capacity, training of staff and sensitization of communities and ERC are highly recommended.
Acknowledgements

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• Entire Winfood Kenya Team including field workers
Entire Winfood Project Team in Cambodia and Kenya

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Thank you