

Soy in the Nutrition of Persons Living with HIV/AIDS

J. Tuakli MD, MPH

WISHH Conference,

Accra, Ghana

Sept. 2006

Ghana

- Approximately 450,000 PLWHA;
- Opportunistic infections COD in 67%
Poor nutrition status a major underlying factor

Life expectancy- 2000 was 57.42 years;
- 2005 was 56 years

(Ghana Statistical Services, 2004)

Human Development Index

0.563 in 2001; 0.520 in 2005 (UNDP, 2006)

Ghana

- Adult literacy rate:
 - 54% -Male: 63 -Female: 46
- Adjusted maternal mortality: 540
- Under five mortality: 112
- Infant mortality: 68
- Malnutrition rates for U-5:
Underweight 22%: Severe 5%: Stunting 30%



Ghana

Theme for new health policy is



Creating Wealth through Health

Improved health and nutrition status leads to greater productivity
economic development and wealth creation (MoH 2006)

Nutrition

- IYCF - Good health & nutrition early in life critical
- Poor nutrition associated with short stature & lifelong ill-health
- Most prevalent form of malnutrition is PEM

Barker hypothesis

- What happens before age of 2 has permanent effect on health, productivity and aging
- LBW (<6.5lb), BMI <17, thin in first two years--- More heart disease, diabetes



IYCF in Ghana

- Beyond breast milk, weaning foods bulky, high in CHO, low in protein and animal fat
- Plant based
- High fiber and phytates in grains bind nutrients such as iron, calcium and Zinc – making them non absorbable.

PLWHA- clinical effects of illness

Non ART related symptoms:

Anemia

Conflicting evidence on use of routine iron supplementation*

Iron overload & oxidative stress

Constipation

Diarrhea

Clinical effects of HIV illness

Fever

Anorexia

Nausea & vomiting

Muscle wasting

Thrush

Malaria

TB

Nutritional effects of HAART

5000 on HAART (GAC)

Anorexia, nausea ◀



Taste, texture

Hi Cholesterol, 

GI distress

Hormone imbalance

Fatigue, Anemia

Reduced food intake



Nutrient depletion ▶ Physical weakness ▲

PLWHA

Nutrient requirements in HIV infected pp affected by the disease itself, nutrients ingested and interactions of the multiple medications

E.g. Effect of Protease Inhibitors, Soy & Fish oils
Zidovudine

PLWHA

Need increased protein (75%) and energy (15%) intake to

- support immune function
- prevent weight loss & muscle wasting
- lengthen survival & prolong independence
- mitigate disease progression
- improve quality of life
- overcome childhood illnesses/opportunistic infections including malaria

The American Dietetic Association and Dietitians of Canada

- Nutritional management is an important feature of effective treatment of chronic HIV infection in any setting and will include maintenance and restoration of body stores, support for adherence to therapy, and decreased numbers of complications associated with disease and therapies.

- Some highlights of their recent position paper:
 - Maintenance of adequate nutritional status is important to survival and preservation of body functions.
 - Protein intake is important to the maintenance and restoration of the body's important muscle and organ tissues.
 - Diets high in both calories and protein may be required to improve the body's response to the challenge of symptomatic HIV infection.
 - While micronutrients are important to health maintenance, it appears that a more generalized protein-energy malnutrition may play the primary role in malnutrition-related immune deficiency.
 - Additional health challenges are now faced by persons surviving due to improved treatment strategies with chronic HIV infection including cardiovascular disease, insulin resistance and diabetes, osteoporosis, oxidative stress, and central obesity. Recommendations for soy foods as a preferred way to meet protein needs may help to meet the goal to reduce risk factors for disease and treatment-associated complications.

Common foods

Plantain

	Energy(kcal)	Protein (g)	Fat (g)	CHO (g)	Vit A(IU)	Vit C (mg)	Iron (mg)	Calcium (mg)
Fried	223	1.4	1.5	51.6	-	14.9	1.3	11
Roasted	174	1.2	0.2	42.4	11.7	23	1.1	9
Plantain fufu	140	1.0	0.2	34.0	14.6	17	0.9	7

Smoked dried fish

	335	70.0	6.0	-	-	-	1.0	26
--	-----	------	-----	---	---	---	-----	----

Soy

	120	9.19	5.1	113			1.4	10
--	-----	------	-----	-----	--	--	-----	----

Soy

Well established in Ghana:

Farms, processors, suppliers (PLWHA)

- Soy milk
- Soy dough
- Soy flour
- Soy beans
- Isolate / Concentrate

*Nkwakubew soy farm

Important issues for PWLHA

Shelf life

Storage facilities

Refrigeration

Clean water access

Versatility; main food/supplement/fortifier

Nutritional value

Low cost

Sustainable agricultural development

Challenges

Shelf life of products

- Soya beans -can be stored for about 2 years
- Soy milk and paste -can stay for up to 24 hours without refrigeration

Very short shelf life

Have to be processed when needed

- Flour and weani-mix can stay up to one month under room temperature

Grows mouldy after month of storage

Soy at the Household Level

- Other immunocompromising conditions e.g. TB, Malaria, Lymphoma, Kaposi Sarcoma
- Protein dense dishes
- Small volumes
- Palatable
- Advance preparation

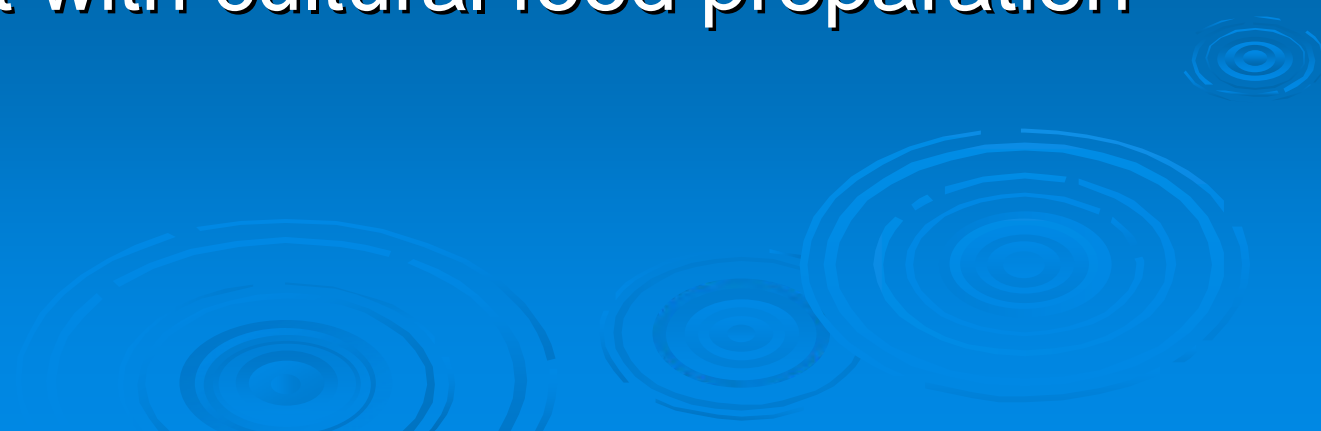


Soy in HIV management

In many cases, nutrition intervention may be a primary treatment. Poor access to health care and anti-HIV medications. Importance of nutrition intervention is amplified where medications are unavailable.

- Soy delivers high quality nutrition in small volumes - especially important because inadequate food is common. Need for small frequent meals
- Soy protein and calories help to prevent body wasting often associated with HIV/AIDS.
- Soy plays a role in nutritional maintenance, an essential feature for optimal effectiveness of HAART while helping to minimize nutrition-related side effects.
- Proper nutrition keeps the body fortified to support the best possible immune function, prevent nutrition-related immune deficits, and help to minimize morbidity /mortality due to opportunistic infections.

Conclusions

- Soy adequately enhances, repairs and maintains nutrition of PLWHA
 - Cost effective food, extender, supplement
 - Ensures food security for HIV affected communities
 - Consistent with cultural food preparation practices
- 

Next steps.....

- Develop soy products for HIV/AIDS HBC & nutrition support programs.
- Develop evidence based programs that stem from feeding demonstration programs and “best practices” for soy
- Perform research to specifically measure quantitative (growth, motor skills, cognitive skills) and qualitative (quality of life, symptom reduction) results of various nutrition programs for HIV/AIDS-affected populations.