

Workshop 1. How to use Moringa leaves and other highly nutritious plants in a medical or nutritional context

Summary of discussions

Expected Results

- *Product standards with acceptable range of variation*
- *Best practices to reach these standards*
- *Guidelines for measuring out Moringa leaf powder according to patient's profile*

Expected Results

- *Patients to exclude from Moringa leaf powder intake for medical / ethical reasons?*
- *Best eating practices/associations to maximize nutrient intake*
- *Further information and research projects needed*

Product standards with an acceptable range of variation

- ***The considerable task of compiling and summarizing data in preparation for this workshop has already been accomplished***
- ***Additional analyses obtained from other participants of the workshop will be added***
- ***The average values as well as the acceptable range of variation will be published in the proceedings***

Establishing product standards with an acceptable range of variation

| Elément <i>Nutrient</i> | Moyenne \pm ET/100g MS Mean \pm SD /100g DM | Elément <i>Nutrient</i> | Moyenne \pm ET/100g MS Mean \pm SD /100g DM |
|---|--|-----------------------------------|--|
| Protéines (g) <i>Proteins</i> | 29 \pm 6 (11) | Potassium (mg) | 1384 \pm 420 (6) |
| Minéraux (g) <i>Minerals</i> | 11 \pm 2.2 (9) | Magnesium (mg) | 422 \pm 52 (6) |
| Glucides (g) <i>Carbohydrates</i> | 38 \pm 7 (6) | Manganese (mg) | 8.4 \pm 2.4 (7) |
| Calcium (mg) | 1924 \pm 288 (13) | Zinc (mg) | 2.5 \pm 0.6 (7) |
| Cuivre (mg) <i>Copper</i> | 1.0 \pm 0.2 (8) | Vitamine A (IU) | 15620 \pm 6475 (7) |
| Fer (mg) <i>Iron</i> | 28 \pm 6 (10) | Vitamine C* (mg) | 773 \pm 91 (5) |

Establishing product standards with an acceptable range of variation

- ***These values will evolve and become increasingly reliable as new data is taken into consideration***
- ***These values will be useful for field work and for communication on Moringa***
- ***But all nutritional studies should include a proper analysis of the particular samples used***

Best practices to meet these standards

- *Cultivars' nutritional content vary little
Except for the iron content of an Indian variety grown in India. Two reliable independent analyses report a very low iron value for these varieties (cultivar-environment interaction?)*

Best practices to meet these standards

- *Production: preferably choose mature leaves (richer in nutrients) for leaf powder and young leaves (more tender) for fresh consumption*
- *Harvesting season can have an effect on nutrient content, but this is difficult to quantify as it varies depending on the local climate. Long conservation also effects nutrient content.*

Best practices to meet these standards

- *Processing can greatly alter nutrient content (esp. vitamins): drying and grinding temperature, drying time, UV exposure...*
- *Processing can also have an effect on the bioavailability of nutrients (which must be very precise when used in a medical context)*

Best practices to meet these standards

- *Storage can influence the nutrient content (shelf life, temperature, oxidization...)*
- *Avoid contaminations while being stored and used (use appropriate packaging)*

Patients' profiles

- *To prevent and cure moderate malnutrition in vulnerable groups: children being weaned (6 months – 3 years), pregnant and nursing women.*

Patients' profiles

- *In addition to medical treatment for people suffering from chronic diseases or particular affections*

Patients' profiles

- *Regular consumption of Moringa leaves by pregnant women increases the birth weight of babies*
- *It stimulates milk production in nursing women*

Patients' profiles

From what is known today, Moringa leaves should not be used to treat severe malnutrition as the patients are very weak and have very specific needs

Medicinal properties linked to leaf consumption

Chronic diseases

- *Boosts the immune system of HIV+ patients*
- *Lowers glycaemia in diabetic patients*
- *Lowers blood pressure (taken as tea or leaf powder)*
- *Drepanocytose*

Medicinal properties linked to leaf consumption

Minor Health Issues

- *Improves libido*
- *Regulates bowel movements (fresh leaves)*
- *Improves sleep patterns*
- *Improves state of health in general in cases of microbial infection (taken as tea)*

Medicinal properties of Moringa leaves

To treat malaria: a decoction of leaves is prepared by soaking leaves in water with palm oil for 24 hours. The next day the patient washes himself with this water (in addition to treatment)

Recommended amounts

- *To prevent or cure malnutrition: 10 to 30g of leaf powder per day (50 to 150g fresh leaves) according to the patient's weight.*
- *For medicinal use, generally 1 to 4 tablespoons are used daily*

Caution

- ***Moringa leaves are not a substitute for medical treatment in cases of illness (HIV, malaria, etc.)***
- ***For pregnant women, the quantities should be lowered during the third trimester to avoid the problems related to giving birth to high birth-weight babies***

Important notice

- *Medical follow-up is always necessary in cases of disease or malnutrition*
- *Moringa leaves should not be considered as a medicinal plant but as a dietary supplement that **bolsters** overall wellbeing*

Important notice

- *If Moringa is associated with disease and malnutrition, healthy people will refuse to use it*
- *People suffering from diseases could be tempted to replace their treatment with cheaper Moringa, which could be dangerous for them*

Best eating practices

Leaf powder should be associated with other foods in order to increase the bioavailability of nutrients:

- For children, pregnant women, nursing women and the ill, as a flour associated with cereals, legumes and lipids
- *As beverage: tea, powder in water (for medicinal use mainly)*
- *Fresh or dry leaves added to traditional dishes*

Best eating practices

These eating practices promote the idea that Moringa leaves are a « health food » rather than a medicine, which fosters consumption sustainability

Further information and research projects needed

Priority research areas:

- *Effects on malnourished children, pregnant and nursing women (figures and statistics)*
- *Effect on HIV+ patients (recommended intake, limitations)*
- *Cardio-vascular pathologies, diabetes, obesity, high blood pressure*
- *Drepanocytose*

Proposals

Create a nutrition task group in the Moringanews Network

Priority actions:

- *Define a simple protocol for clinical follow-up that can be easily used by field workers in order to gather as much comparable data as possible*

Proposals

- *Establish technical notes on production, processing, storage, packaging, nutritional values, recommended intake, food associations for optimal efficiency*
- *Set up common research projects*