Show Malnutrition Your Green Tongue!¹

HAENY, Selina

Antenna Technologies Foundation, Geneva, Switzerland, e-mail: shaeny@antenna.ch

Abstract – Malnutrition is the most severe health problem the world faces. It needs to be addressed as early as possible within a person’s life. Spirulina is loaded with the necessary nutrients for a healthy growth path, and common diets in the realm of the base of the pyramid are lacking. Spirulina can bring a child under 5 years of age out of moderate malnutrition and enables a mother to give birth to a healthy child mainly due to its high content in protein, Vitamin A and iron. Yet these premises, positive experiences and case studies, official accreditation to use spirulina as a tool to combat malnutrition and clinical studies are still lacking and complicating the dissemination of spirulina on a large scale. Awareness and market creation are further means to push the large-scale dissemination, but these are still in its „infant shoes“. In line with the one health approach, the stakeholders in the realm of combating malnutrition can only overcome the nutrient deficiencies and enable the poor to live a healthy and prosperous life, by joining hands and forces.

Keywords – malnutrition, spirulina, nutrient deficiencies, health, Millenium Development Goals (MDG).

1. Malnutrition is the number one problem

Malnutrition is a silent, insidious massacre that needs our full attention to stop it as fast as possible. If it cannot be combated within early childhood the lifelong negative impacts upon the individual’s life are devastating leading to a negative spiral for the whole population. The Copenhagen Consensus 2008 arrived at the conclusion that malnutrition is the number one problem of the world (Horton et al., 2009). Based on cost-benefit-analysis, the Copenhagen Consensus set priorities to address the global challenges. Five of the top ten solutions are related to malnutrition.

1.1. Negative impacts of malnutrition affect the whole population

“Famines lay waste to countries: bad diets cripple them silently” (Economist, March 26th, 2011)

The Economist (2011) points out the cruelty of malnutrition: its silence and long-term negative impacts. The vicious cycle starts already before the child is even born, in the womb of the malnourished mother. Lack in education, and poverty lead to reduced access to proper nutrition, and consequently to malnutrition. The child in the womb has limited nutrients available to support his growth, which leads to stunting (figure 1). When growing up, the situation goes from a bad start, to worse. The five first years of a child’s life are crucial for his cognitive development; micro- and macronutrients are thus crucial within this period. Lack in such nutrients within this period of growth has irreversible impact on a child’s growth path. As a result, the child has limited potential, and is less capable to break out of poverty. The cycle closes itself and the child, grown up to an adult by the time now, finds himself with the same limitations in access and knowledge about health and nutrition and has limited chances to give a better life to his successors.

1.2. A promising weapon and its stumbling blocks

Spirulina, a spiral shaped green algae (which the title of this paper is already making reference to: “show malnutrition your green tongue” can be translated into eating spirulina to combat malnutrition), is a rich and inexpensive source of protein, vitamin A, iron and many other essential micro- and macronutrients. It is very easy to grow in brackish water and warm climate where it reproduces itself simply by dividing as a photosynthetic organism using ten times less water than vegetables. Furthermore,

¹This article is based on a presentation given during the 2nd GRF Davos One Health Summit 2013, held 17-20 November 2013 in Davos, Switzerland (http://onehealth.grforum.org/home/)
spirulina grows without fertile soil or earth medium and needs no pesticides. It is thus very ecological and saves the scarce resources. It has also a very high-demonstrated bioavailability and can be added to any food as long as it is not heated over 80° Celsius. Otherwise, the nutrients would be destroyed.

Antenna Technologies and the Medical College of Madurai have discovered in 1999 “that a daily dose of 1 to 3 grams of spirulina, over a period of 4 to 6 weeks, could be sufficient to cure young children of 5 years or younger of their mild and moderate malnutrition” (Antenna, 2013). Though the United Nations General Assembly (2005) took note on the potential of spirulina, and called for action to encourage the production and use of spirulina, international organizations have been very cautious and slow in promoting and supporting the use of these powerful algae. Furthermore the call for more scientific support for spirulina, which falls into the responsibility of high health professionals prominent in such organization, is hindering the dissemination of spirulina because they are still missing.

In view of the one health approach, this paper calls for action among the institutional stakeholders to invest into scientific studies on spirulina in order to lower the barrier of its dissemination and application in combating malnutrition. Further, this paper presents an additional strategy of Antenna Technologies Foundation, tackling the obstacles spirulina still faces by joining forces with private-public-partnership and a market approach. Both strategies are based on the premises that only synergies resulting from several stakeholders can make a change.

2. How can we colour one million green tongues and beyond?

Together with two partners in India, Ambuja Cement Foundation and Child Fund India, Antenna Technologies Foundation has teamed up to tackle the most important global health issue: malnutrition. Nearly one in four children under the age of 5 are stunted because of chronic under nutrition and less than 50 per cent of women receive adequate iron and folic acid supplementation during their pregnancy (Smerdon, 2013). Our plan is to focus spirulina supplementation in the most crucial phase of an individual’s life: pregnancy and the first 1000 days on earth in order to increase our impact in combating malnutrition. But how can we reach our ambitious plan of lifting out one million people within the next seven years? How does
spirulina reach the people living at the base of the pyramid in remote areas? And what is the contribution of big international organizations?

2.1. Awareness creation

92 % of mothers in India do not know about malnutrition (Naandi Foundation, 2011). How can we expect them to change their feeding practices, if they do not even know why they should change? Similar to the lifebuoy campaign conducted by unilever (Unilever, 2013), the first step of addressing the problem of malnutrition is to create awareness. The aim is to avoid finger-pointing messages, but to interact and integrate the community within the process. Against the odds, there are always some families living in the same realm having healthy children. Listening to their practices, and lifting out these existing solutions is part of the PD (positive deviant) strategy which empowers the community leading to behavior change and adoption of best practices from their positive deviant peers. With our strategy, we aim at listening to the community and lifting out such existing solutions: the PD hearth session. Within this session, the community is fully integrated and awareness is created about the hidden massacre of malnutrition, as well as spirulina, while sharing best practices of how to prepare nutritious food. They are empowered in their capability to solve the issue with their existing resources. The focus is thus shifted from the problem to the solution. Our strategy is based on the premise empower the community, in order to enable them to take over the lead in sustaining the innovation. Knowledge, awareness and sharing of best practices are the most powerful legacies that account for our innovation resulting from the PD hearth sessions. The discovered best practices will be adopted and passed on to future generations, building a stronger community that is able to improve the under-5 child survival with their existing resources.

2.2. Market creation

Spirulina is an efficient tool to lift children out of moderate malnutrition. Only a healthy child is able to absorb the nutrients of his daily diet and to improve his growth. Without spirulina, and only improved feeding practices resulting from the PD hearth sessions explained above, the children are less capable to recover and it takes more time – time children below five years of age do not have because this growth period is key to a healthy life. In order to create a market for spirulina the people living in the realm of the base of the pyramid need to know about the power of spirulina, and have access to an attractive and fun spirulina product (for example as depicted in Figure 2 further above: the green tongue candy).

Awareness on spirulina can be shared through PD hearth sessions. But the best and most compelling way is to experience the benefits of spirulina personally, which means for a mother to see how spirulina is able to improve her child’s growth. No mother wants to see her child being malnourished. One visualization tool is the growth chart based on the World Health Organization (WHO) growth standards, where a mother can observe the increase of her child’s weight and the shift into a better category. Moving from the red zone into the orange – or even green, assures every mother of the power of spirulina. Figure 3 (WHO, 2013) depicts a symbolic growth curve of a healthy child, and his progress.

![Figure 3: Symbolic growth chart (WHO, 2013)](image)

Only convinced mothers will purchase spirulina for themselves and their children. But this is only one part of the equation. The other part of the equation is whether the child is willing to eat it, and whether the product is easily available. For children, fun is more important compared to the health benefit. Further, if it is an attractive product, accepted among their peers, this will boost their urge for it. Also, establishing an efficient distribution system based on local and existing structures, e.g., Anganwadi networks and small stalls and kiosks, ensures the availability of the natural food supplement spirulina to boost the health, and to meet the daily nutrients intake a normal diet usually lacks within this setting.

Local women have the opportunity to increase their income by selling spirulina products at an affordable price to the base of the pyramid. This meets the long-term financial viability for both sides: producer and consumer. Instead of buying junk food already available at small retail-kiosks in the villages, people have the opportunity to purchase a healthy and effective natural alternative in the form of a e.g. spirulina bar. We on the other hand are able to reach more people by selling at an affordable price to them instead of distributing the products freely.

2.3. Clinical studies and institutional action

Antenna Technologies Foundation has many years of experience in cultivation and dissemination of spirulina and faces one revolving challenge: the lack of official credibility of spirulina. Whenever Antenna Technologies Foundation shares their experience of the positive impact by spirulina supplementation among interested NGOs and other stakeholders in the realm of combatting malnutrition, there are always doubts and questions left. Sharing the data and experience gathered on spirulina by Antenna Technologies Foundation does sound promising to them.
at first, but in order to implement spirulina within their programs they are seeking for more credible proof. And this credibility stems mostly from studies marked with the emblem of one of the big international brands in the realm of health, child and malnutrition: UN, UNICEF, WHO and FAO.

So far, most of the studies on spirulina have been conducted by small organization with limited resources. Therefore most studies do not meet the criteria of clinical studies. For this, institutional support and effort is highly wanted and needed. The dissemination of this wonder weapon in the combat of malnutrition cannot be pushed to the next level, without the support of these big international organizations.

3. Added value to the one health approach

Spirulina is a power food using limited resources, considering carefully the implications on climate change, ecosystem land and water use (Figure 4). Further, it aims to reach several Millennium Development Goals by developing a healthy product for the base of the pyramid. Only a communication strategy embedded within the cultural context and addressed to the community reaches the affected persons and facilitates to manage a major health risk. Partnering with organizations from the private sector and with NGOs strengthens the implementation by profiting of their networks and different competences. Last but not least, further research builds the basis to ensure quality and the ability to scale and reach out to more persons.

4. Let us show malnutrition our green tongue!

Malnutrition is a widespread silent massacre, hindering the prosperous development of entire countries and limiting the possibilities to break out of poverty for millions of individuals. In order to proof the power of spirulina in combating malnutrition, it is fundamental to conduct clinical studies. Furthermore, by joining hands beyond sectors and institutional background, by adopting an innovative, locally embedded solution that is ready to scale can we empower spirulina and show malnutrition our green tongue.

References


The Economist (March, 26th, 2011). Quality, not quantity. Why small doses of vitamins could make a huge difference to the world’s health. The Economist, 398 (8726), 18


Citation


Citation