NOURISHING THE MALNOURISHED

By Catherine V. Nnamani

Overview

Twelve years after the declaration of the Millennium Development Goals, where world leaders committed their nations to a bold global partnership to eradicate extreme poverty and hunger by 2015, an unacceptably high rate of malnutrition still persists in Nigeria, despite several commitments made by National and International Donor Agencies towards this course (Burchi et al., 2011; UN General Assembly, 2001). Malnutrition, which is the highest health risk to sustainable development, still devastates about 11% of Nigeria's under-five children, women and the elderly. Grebmer et al (2010) in Global Hunger Index (2010) ranked Nigeria 40th out of 80 countries with high proportion of hungry people, yet it is endowed with rich natural biodiversity. Children born and raised in poor, rural families face a higher risk of malnutrition induced illnesses such as stunted growth, goitre, blindness, kwashiorkor and marasmus (FAO, 2005). In light of the above, it has become imperative that policy attempts are made to reduce this menace and thereby enhance sustainable development in the country. This study provides some approaches that could enable policy makers to take deliberate steps in this direction.

Figure 1: Traditional leafy vegetables are readily accessible, cheap, and affordable to many resource-poor people in rural areas.

Malnutrition in South-Eastern Nigeria

Grebmer et al (2010) reported that food insecurity in relation to hidden hunger in Sub-Saharan Africa (Nigeria inclusive) is due to the high proportion of people who cannot meet their daily protein needs. This is largely because a significant number of Nigerians have progressively become dependent on a handful of carbohydrate based staples.

Over 50 % of their body's requirement of proteins, calories and minerals are met by few starchy staples.

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This nutritional insecurity limits the sources of nutrients for these poor rural and peri-urban communities, thereby snowballing malnutrition/ hidden hunger. Nevertheless, this chronic yoke of malnutrition in Nigeria cannot be solved by food aid or food trade from affluent countries, but rather by the adequate and sustainable utilisation of the rich biodiversity in the country. This is more crucial now than ever given the looming food crisis that threatens to further reduce the inadequate food security experienced in many states of Nigeria. Diversification of dietary menu to include underutilised traditional leafy vegetables (TLVs), which are cheap, readily available and affordable, could contribute to the daily dietary requirements and livelihood options of the resource-poor rural and semi-urban dwellers.

Approach

The current work used Multidimensional Analysis (MDA) for Decision Making to rank and classify 13 underutilised TLVs (Figure 2).

Figure 2: Underutilised traditional leafy vegetables (TLVs) of South-Eastern Nigeria. (1: *Senna occidentalis Linn*, 2: *Solanum nigrum Linn*, 3: *Ficus capensis Thunb*, 4: *Ipomoea aquatic Forsk*, 5: *Synedrella nodiflora Gaertner.*, 6: *Vernonia cinerea* (L.) *Less.* 7: Ageratum conyzoides L., 8: *Acanthus montanus (Nees) T. Anders.*, 9: *Mucuna flagellipes Hook.* F., 10: *Zanthoxylum zanthoxyloids Lam.* 11: *Amaranthus spinosus L.* and 12: *Telfairia occidentalis Hook*

They were selected from some local communities in South-Eastern Nigeria based on their most desirable nutrients following proximate and antioxidant analyses, using standard methods by Pearson, (1976) and AOAC, (1990), respectively. The results were compared with *Lactuca sativa L and Telfairia occidentalis,* exotic and conventional vegetables, respectively.

Key Findings

Results from the study established that, these under-utilised TLVs are potentially endowed with high levels of essential nutritive and antioxidants components, required for the maintenance of good human health. They could contribute in reducing malnutrition in these resource-poor communities in Nigeria.

The results reveal that *S. occidentalis* ranked 1st with a weighted factor (WF) of (4.16), followed by *S. nigrum* (3.90), *T. occidentals* 3rd with WF of (3.75), while *L. Sativa* ranked 4th with WF of (3.56) in total values of Protein-energy calories (Kcal) content (Table.1).

In relation to the antioxidant values, *S. nigrum* ranked 1st with WF value of (5.18) while *A spinosus* ranked 2nd with WF value of (4.61), and *L sativa* ranked 14th with WF (1.21) (Figure 3).

However, when the total decision on the TLVs with all the indicators of desired and high nutritive elements, energy calories and high content of antioxidants were pooled together , S. nigrum ranked 1st with a summation of (9.08) WF, followed by *A. spinosus* 2nd (Figure 3). The least with regards to total MDA ranking was *A. cepa* with (3.13). This ranking of S. nigrum as the 1st among the 15 TLVs is an indication that these underutilised traditional leafy vegetables when compared with the highly cherished exotic and expensive species like *L sativa* and the conventional *Telfairia occidentalis* could contribute significantly to the daily nutritional requirement and antioxidant needs of poor households in resource - poor communities in Nigeria.

Key Messages and Policy Recommendations

The poor rural and peri-urban communities in Nigeria with their low income capacity and poor crop yield will continue to be vulnerable to malnutrition if nothing is done to scale up their food security and nutritional needs. This study therefore identified critical points for policy actions.

1. Providing High Protein Nutrients

S. occidentalis and *S. nigrum* in terms of high moisture of 95.19%, 88.50 %; by high protein values of 20.58% and 26.49 %; by relatively high carbohydrate values of 58.48% and 33.65 %, with moderate low fat contents of 0.35 and 1.8 0 and high fibre value of 2.40 and 3.01 (Table1) are good sources of these nutrients. In the same vein, the high protein-energy calories values of *S. occidentalis* and *S. nigrum* of 668.02 and 539.11 (kcal) (Table1), when compared to the Recommended Daily Allowance of 1,800 kcal protein- energy calories for children make these underutilised leafy vegetables an ideal source of nutrients for children who are vulnerable to malnutrition in poor local communities in Nigeria. It will equally help those with health challenges who require special diet in the poor communities. Promotion of their nutritional benefits and consumption of these will help reduce the amount of foreign exchange that goes into importation of expensive drugs.

Table 1: Multi-dimensional Analysis for Decision making on the Energy Values (Kcal) of the TLVs of South-Eastern Nigeria

S/N	Moist	WF	Protein	WF	Carb	WF	Fat	WF	Fibre	WF	Energy (Kcal)	WF	Total	Ranking
S. occidentalis	95.19	0.995	20.58	0.776	58.48	0.037	0.35	0.571	2.40	0.797	668.02	0.990	4.166	1
S. nigrum	88.50	0.925	26.49	1	33.65	0.065	1.80	0.111	3.01	1.000	539.11	0.799	3.90	2
T. occidentals	80.03	0.837	24.67	0.931	42.28	0.052	1.20	0.166	2.30	0.764	674.33	1.000	3.75	3
L. sativa*	95.60	1.000	1.40	0.052	2.20	1.000	0.20	1.000	1.16	0.385	83.710	0.124	3.561	4
N. leavis	81.10	0.840	17.58	0.663	58.27	0.037	0.95	0.21	2.50	0.835	653.37	0.968	3.553	5
M. flagellipes	69.35	0.725	17.41	0.657	24.01	0.091	0.30	0.666	2.01	0.667	352.36	0.522	3.328	6
V. cinerea	82.65	0.864	15.92	0.6	9.62	0.228	0.30	0.666	1.85	0.614	219.59	0.325	3.297	7
S. nodiflora	81.05	0.847	16.51	0.623	10.01	0.219	0.25	0.800	1.20	0.398	413.60	0.613	3.285	8
A. montanus	82.80	0.866	19.10	0.721	11.12	0.197	0.50	0.400	1.89	0.627	262.77	0.389	3.200	9
A. conyzoides	83.20	0.870	18.98	0.716	12.15	0.181	0.80	0.250	2.30	0.764	276.55	0.410	3.191	10
I.aquatica	87.15	0.911	15.99	0.603	8.72	0.252	0.35	0.571	1.05	0.348	213.68	0.316	3.001	11
A. spinosus	81.05	0.847	22.11	0.834	33.05	0.066	9.50	0.021	1.44	0.478	490.44	0.727	2.973	12
F. capensis	81.09	0.848	17.88	0.674	12.45	0.176	0.67	0.298	1.75	0.581	259.26	0.384	2.961	13
Z. zanthoxyloides	90.40	0.945	6.12	0.231	66.20	0.033	3.50	0.057	2.35	0.780	282.72	0.419	2.465	14
A. cepa	76.32	0.798	11.53	0.435	78.36	0.028	0.97	0.206	0.07	0.023	303.23	0.449	1.939	15

Legend: Moist= Moisture, Carb= carbohydrate, WF= weighted Factor, * Data from Latham, (2000), Cauniiet al., (2012)

2. Resolving Antioxidant Deficiencies

A typical resource-poor community in Nigeria is characterised by stunting, underweight, rickets, scurvy, beriberi, kwashiorkor and hyper pigmentation. These are common symptoms which indicate high prevalence of micronutrient and antioxidant deficiencies in both infants and adults alike. Results from this study showed that *S. nigrum* and *A. spinosus* with Vitamin A contents of 1517.73 ± 0.20 iu and 1078.01±0.04 iu, respectively are potential sources of this essential micronutrient. The inclusion of these two vegetables in the daily diet of children under five years could contribute to reducing malnutrition in poor communities in Nigeria.

3. Scaling up Awareness on the Nutritional Value of TLVs

Promoting enlightenment on the nutritional benefits of these TLVs by civil society organisations (CSOs), community based organisations (CBOs), women groups and religious organisations, will help these rural and peri-urban dwellers to increase the production and consumption of these vegetables. *S. nigrum* and *A. Spinosus* with protein-energy calories (Kcal) and antioxidants values (Figure 3), could be ideal for the under-five years, pregnant women and the elderly who are the most vulnerable to malnutrition, arising from their low income capacity. This could reduce government expenditures on extra nutrient fortification for its populace if these underutilised leaves are well documented and popularised.
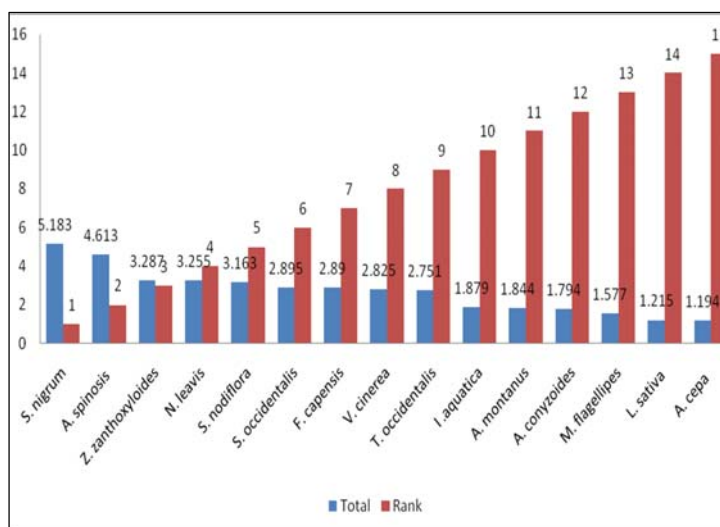

Figure 3: MDA Rank for the entire desirable nutrient (Protein-energy calories & antioxidant) Values of the Traditional Leafy Vegetables of South-Eastern Nigeria.

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