

Potentials of wild edible plants and traditional foods in Africa:

Findings from Tanzania

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Introduction

Fourth UU-A Web online symposium as part of Inter-University Exchange Project with African Universities took place on 21 Jan 2022 with 47 participants and collaboration of Center for the Multicultural Public Sphere (CMPS), School of International Studies, Utsunomiya University and Utsunomiya University Center for Weed and Wildlife Management. The symposium reported findings from JSPS KAKENHI “Possibilities of wild edible plants and traditional meals in East Africa: Through nutrition analysis in Tanzania” (Grant-in-Aid for Scientific Research (B): 1 April 2018 – 31 March 2022) and future potential research for future collaboration.

Possibilities of wild edible plants and traditional meals in East Africa

To contribute to SDG2 on eliminating hunger with consideration to other SDGs, the research project aimed at prevailing the possibilities of wild edible plants and traditional meals in Tanzania. The basic interest of the research was to understand: (i) Quality of life (QOL), health; (ii) Food, wild food intake; (iii) Social and natural environment; and how it relates to each other especially its contribution to QOL.

The major research activities were preliminary investigations in Dodoma, Lindi, and Dar es Salaam (Ohmori et al. 2020, Sakamoto et al. 2022) and questionnaire interviews to 424 respondents in villages of Iringa, Dodoma, and Lindi (inland and coastal) regions (Sakamoto et al 2021a-c; 2020a), and its analysis.

Factors affecting health-related Quality of Life (QOL) in East Africa (Ohmori et al. 2021)

Health-related QOL and its contributing factors have been analyzed in the four research sites. QOL has been measured by the Swahili version of SF (Short-form)-12, consisting of Physical Components Summary (PCS, calculated from PF: Physical Functioning; RP: Role Physical; BP: Body Pain; GH: General Health) and Mental Components Summary (MCS, calculated from VT: Vitality; SF: Social Functioning; RE: Role Emotional; MH: Mental Health) based on the questionnaire. The following 10 indicators were statistically analyzed to understand its contribution on PCS and MCS. Food intake frequency of 12 food groups, secondary education, utilization of wild food in time of food shortage, relative wealth/poverty within the village, food and monetary assistance (receipt, provision), and mutual assistance. One-way ANOVA, post hoc test, Turkey, and multi-regression was done. In conclusion, subjective health evaluation, specifically PCS was related to subjective wealth/poverty perception and mutual relations. Further research on double burden of

malnutrition, and the relationship between health and social capital is expected.

Regional and seasonal comparison of food intake frequency in Tanzania (Muto et al. 2021)

Food groups intake frequency were compared between four research sites using Kruskal-Wallis test, and between seasons using Wilcoxon signed rank test. In conclusion, low protein was generally confirmed in 3 sites as indicated in previous research, except coastal Lindi village where fish is highly consumed. Seasonal comparison prevailed that there was low diversity in the dry season expect for inland Lindi village. On the other hand, high diversity of food intake was seen in the rainy season in all villages. There is a tendency to focus on the staple food deficit in the rainy season, but the analysis prevailed that food diversity increases in the rainy season.

Wild food intake and QOL (Sakamoto et al. 2021b)

The relationship between wild food intake in three research sites (Dodoma and inland/coastal Lindi) and QOL have been analyzed by correlation (Spearman) and multiple regression. As a result, there were both negative and positive correlations.

Negative correlations were seen in Lindi region. In a coastal village of Lindi, respondents with higher intake of wild food had poorer health: RE in the dry season; RP and VT in the rainy season. While the location of the wild food in the residential area may have influenced, various reasonings need to be further investigated. In an inland village of Lindi, lack of food is supplemented with wild food, but this may not have been enough, and added mental stress.

Positive correlations were seen in inland villages. In inland village of Lindi, respondents with high intake of wild food in both seasons had high evaluation of PF. The diverse variety of wild food may have contributed to their health, but there is also a possibility that their high physical function may have allowed them to collect wild food. In a semi-arid village of Dodoma with generally low intake of wild food, respondents with higher intake of wild food in the rainy season had good evaluation of GH. The utilization of leafy vegetables in the rainy season may positively influenced their health.

The research highlighted different correlations between villages. Positive influence of wild food intake can further be investigated for promotion in low consumption areas for health benefits. Negative influence, mainly mental and role, need to be investigated further for risks. Image of wild food may have also influenced.

Nutrition analysis of African leafy wild vegetables semi-arid Tanzania (Lilian Kaale, University of Dar es Salaam)

Proximate composition, mineral, and vitamin contents of seven African wild leafy vegetables

(AWLVs) consumed locally by rural populations of the semi-arid Dodoma region in Tanzania were determined. A WLVs evinced high iron, calcium, and protein contents and moderate β -carotene and vitamin C contents. Compared with raw *Cleome gynandra* (Cg-RL), raw *Cleome hirta* exhibit higher iron and calcium contents. High calcium contents were also revealed in both raw and dried *Ceratotheca sesamoides*. Raw *Ipomoea obscura* contained high iron contents, extremely higher than cultivated sweet potato leaves. Raw *Ipomoea sinensis* subsp. *blepharosepala* and *Ceratotheca sesamoides* (Cs-RL) were also iron-rich. Dried *Ceratotheca sesamoides*, *Cucumis dipsaceus*, and Cg-RL exhibited the highest β -carotene and vitamin C contents. A WLVs, which are endemic not only to inhabitants of the Dodoma region but also to the people in African countries, are recommended for managing protein, mineral, and vitamin deficiencies.

Future steps

To capture the intake of wild food of children and its influence on their health, preliminary pilot test was done in an elementary school in Lindi (Sakamoto et al. 2021c). Further research includes processing of more questionnaires, and enquiry on other wild food including the baobab is future research. Dissemination of the results is also an important aspect of research: A plant book on edible plants and tailor-made feedback in the research areas are planned, in addition to this symposium. The participants were persuaded to recognize what is available in their respective environment that could benefit people's quality of life and health.

Potentials of the baobabs for improving health and food security (Prof. Linus Munishi, NM-AIST)

The African baobab is widely distributed in the semi-arid Sub-Saharan Africa and is known for its dense nutritional properties that can be harnessed to improve community livelihoods (Msalilwa et al. 2019; 2020a; b). The baobab has been recognized as food and vegetable resource for more than two centuries. Now, there is a need to guide research and development agenda on how to harness and unlock the potential benefits of baobab for livelihoods improvements.

In the phase of increased global challenges such as climate change, food insecurity, and global pandemic (including Covid-19), and given the ever growing urgent need for transformation towards healthy diets and sustainable agro-ecosystems, more research should be directed towards generating unified and refined information at small-scale level about baobab species on their ecology and biology, conservation genetics, ethnobotany, pharmacognosy, and domestication potentials to generate future opportunities towards addressing poverty, food and nutrition insecurity, and land degradation in Africa. Furthermore, addressing the challenge of unsustainable land use through intensification of baobab and domestic food crops is critical for the development of utilization and sustainable management strategies for the baobab species and this will ultimately contribute to attainment of the Sustainable Development Goals (Goals 1, 2, 13 and 15) and Agenda

2063 of the African Union (Aspiration 1).

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