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GUEST EDITORIAL

Indigenous Foods and Their Contribution to Nutrient Requirements

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Indigenous plants grow spontaneously in natural ecosystems and have been serving human kind as food and medicine in almost all societies for generations.[1,2] It is recognised[3] that indigenous foods and dietary diversity within an ecosystem can be powerful sources of nutrients and thus are better for health. It has been proposed that indigenous foods can play a major role in enhancing quality of diets and improving food and nutrition security.[4] Despite this assertation, the use of indigenous foods has declined due to the non-availability of these foods in modern commercialised and industrialised markets and lack of investment in research and development. The indigenous crops have been largely ignored by commercial farming, research and development, thus becoming less competitive than well-established major crops, and losing gradually their diversity and the associated traditional knowledge.[5] The new South African Food Based Dietary Guidelines emphasise the food value of indigenous crops by the message they impart "must be realistic, do-able, promoting indigenous and traditional foods".[6]

Food security policies globally have almost completely ignored the potential nutritive value of indigenous foods, especially those harvested in impoverished communities.[7] While a variety of social and ecological drivers are acting to reduce wild food use, it is clear that wild plants and animals continue to form a significant proportion of the global food basket, and their importance may be set to grow as pressures on agricultural productivity increase.[8] Surveys indicate that there are over 7000 plant species across the world that are cultivated or harvested from the wild for food.[9] These underutilised species play a crucial role in food security, income generation, food culture and can contribute to nutrient requirements. Historically, wild plants and animals were the sole dietary components for hunter-gatherer and forager cultures.[8] Provision of and access to these food sources may be declining as natural habitats come under increasing pressure from development, conservation-exclusions and agricultural expansion. Despite their value, indigenous foods are excluded from official statistics on economic values of natural resources. An ethnobotanical survey[10] was conducted in the Amathole district municipality in the Eastern Cape, with the aim of documenting the wild vegetables growing in the area and examining the state of the communities' knowledge. The survey identified 22 species from 12 different families, and revealed that the younger generation and men knew less about wild vegetables when compared to older women. Furthermore, they reported a lack of interest in including these foods in their usual diet in favour of conventional vegetables such as spinach and cabbage. A similar ethnobotanical survey in the same district of the Eastern Cape observed a total of 25 indigenous wild leafy vegetables species belonging to 16 families that were frequently consumed.[11] Furthermore, 58 indigenous edible plant species with a total of 69 uses have been reported to be used by contemporary Khoe-San descendents of the Cape South Coast.[12] Bharucha and Pretty[8] reviewed the use of wild species in 12 Asian countries and 10 countries in Africa in 36 studies, and reported 90 to 100 as mean use at community level with a maximum reach of 800 species (in India, Ethiopia and Kenya), demonstrating the global use of indigenous plants.

Kebede and Bokelmann[13] investigated the sustainable production for food security of five indigenous vegetables in Kenya. These were Amaranthus, Cowpeas (*Vigna unguiculata*), African nightshade (*Solanum species*), spider plant (*Cleome gynandra*) and Ethiopian kale (*Brassica carinata*). The indicators used to assess sustainability production were seed source, type of fertiliser and irrigation methods. They found that most producers used local seeds, most intercropped those five species with maize, and only less than 24% irrigated the crops. Producers indicated that there was no need to irrigate the crops. They concluded that the production of these five indigenous vegetables, even though done in small fields, was sustainable and could be used to ease the food insecurity tensions. Eating indigenous and traditional food that grew in the wild was one of the coping strategies reported by Mkhawani et al.[14] in their study of the effects of rising food prices on household food security on female headed households in Mopani District of South Africa. Kidane et al.[15] also observed that 30 leafy vegetables grouped into 20 genera and 15 families were more frequently used during periods of food shortage in Ethiopia.

There is evidence from studies conducted in South Africa and around the world, that indigenous foods are consumed by many households especially in areas where they are available, and thus can play an important role in alleviating

food insecurity and contribute to dietary diversity. Many varieties of indigenous plants that are consumed as plant sources have been identified.[16-21] However, consumption of indigenous foods is not well documented or sometimes ignored during national dietary intake surveys; in some instances the different varieties are clustered into one name or group, wild *imifino* or *morogo*, despite their different chemical and nutrient composition. In South Africa the consumption pattern is highly variable and depends on geographic location with highest consumption mainly in rural areas. Many people consumed indigenous foods they believe would reduce some risk of certain diseases.[22,23,24]

Many rural communities have access to indigenous and traditional crops that are rich in micronutrients, which are likely to serve as a long term strategy to eliminate food insecurity and contribute to nutrient requirements. These include indigenous fruits, vegetables, tubers and roots. The micro- and macro-nutritional properties data of wild foods lags behind that of cultivated species[25] for many countries including South Africa. Comprehensive food composition data is a critical step and important for the promotion and inclusion of indigenous foods in daily diets. In an intervention study to promote the inclusion of indigenous foods in the complementary diet of three to five year olds, published in the current issue of the SAJCN, Mushaphi et al.[26] implemented a Nutrition Education Intervention programme in a pre-test post-test design study. They showed that the majority of children were consuming indigenous foods at baseline, and that the intake of some of these foods was significantly increased in the experimental group post-test when compared to the control group. They attributed the high consumption observed to the intervention and seasonal availability and accessibility of indigenous foods in the study area. These findings may be applicable in similar environments where indigenous foods are available and accessible. Since the study participants were children three to five years and the caregivers were the change agents, the intervention was not directly changing participants' behavior.

Many African leafy vegetables are good sources of micro-nutrients such as vitamin A, C, iron, zinc and magnesium and contain significant levels of micro-nutrients that are essential for health.[27] It is further recommended that the nutritional value composition data could be used to develop strategies to promote the consumption, acculturation and commercialisation of the African leafy vegetables. Amaranth is a rich source of protein, vitamins, minerals dietary fibre, lipids, unsaturated fatty acids and bioactive compounds and a promising crop for cultivation due to its adaptability to adverse environments.[28] The cooked leaves of *Amaranthus* are consumed in different ways as condiment, vegetable, soup or sauce. Other indigenous vegetables rich in nutrients include *Cleome gynandra, Curcubita maxima*, *Vigna unguiculata*, *Solanum nigram, Bidens pilosa, Urtica urens, Ribes uva crispa* and *Taraxacum officianale* and *Beta vulgaris*. *Strychonos spp* (aka Natal orange) has been shown to be a precious food source that it is rich in vitamin C, zinc and iron.[29] Another indigenous fruit rich in nutrients is Marula (*Sclerocarya caffra*) which has a Vitamin C content 8-fold higher than orange, is also rich in iron, oleic acids and antioxidants, and has high levels of protein (nut), energy, magnesium, zinc, phosphorus and copper.[29]

There is scarcity of data on economic value and practices of indigenous foods in South Africa. Yet anecdotal evidence shows that these foods are sold in front of supermarkets, by street vendors, and along major road networks.[30] Thus, the demand at national level is unknown. Spar supermarkets in some provinces have started in the past few years making indigenous foods available for consumers. The consumers' willingness-to-pay for indigenous vegetable crops was investigated in a study conducted in 300 subjects from three districts in Limpopo province.[31] Almost 80% of their subjects were willing to pay; however, the older consumers located in the semi-urban areas were not willing to pay. Taruvinga and Nengovhela[32] investigated the consumers' perception and consumption dynamics of African leafy vegetables in the Eastern Cape in 100 subjects. Their findings revealed high levels of awareness, consumption and positive perceptions with regression suggesting a possibility of increased consumption based on age, access of fields, availability on the market, production and health. Another study[33] identified consumer attitudes as the strongest predictor of consumer intention to buy African indigenous foods in Kenya and determined that consumer intention was high. These findings contrast the perceptions that Africans have no interest in their traditional practices, and suggest potential demand and economic opportunities for indigenous foods.

One of the strategic goals of the South African National Policy on Food and Nutrition Security[34] is to ensure the availability, accessibility and affordability of safe and nutritious food at national and household levels. The policy cites that dietary diversity is pivotal to the attainment of food and nutrition security, and further asserts that the neglect of indigenous food exacerbates micro-nutrient deficiencies. The policy also promotes food environments that recognise indigenous food as an important cultural heritage that must be preserved. Indigenous food crops can thus be crucial contributors to the diet by providing essential micronutrients and health benefits. Mushaphi et al.[26] findings therefore further strengthen the recommendations of national policy which proposes the promotion of indigenous foods consumption to benefit nutritional and health status, by increasing knowledge of the food value of indigenous foods through nutrition education.

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