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An investigation into the consumption patterns, attitude, and perception of Mauritians towards common medicinal food plants

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ABSTRACT

The use of medicinal food plants (MFP) as herbal remedies is currently undergoing a renewed interest, with increased sales, consumer preference and regulatory interest. Mauritius is a multi-cultural island with a long-standing tradition in the use of herbal remedies. This study has endeavoured to evaluate the consumption pattern, culinary and medicinal uses, attitude and perceptions of Mauritians towards seven common MFP (*Amaranthus hybridus* (amaranth), *Aloe vera* (aloe), *Momordica charantia* (bitter-melon), *Lagenaria siceraria* (bottle-gourd), *Moringa oleifera* (drumstick/leaves), *Artocarpus altilis* (breadfruit) and *Artocarpus heterophyllus* (jackfruit)) with the aim of identifying significant influential factors (if any) which shape attitudes of Mauritians. Questionnaire-guided face to face interviews were performed ($n = 384$; age ≥ 30 years). Preliminary analyses, descriptive statistics and inferential tests (ANOVA, *t*-tests and χ^2 test) were applied. Quantitative ethnobotanical indices (use value (UV), fidelity level (FL) and informant consensus factor (ICF)) were used to assess the medicinal importance of the MFP. There was a general consensus that MFP were known for their medicinal role. Taste was a significant ($p < 0.05$) factor influencing consumption among different age groups. Older participants (≥60 years) showed significantly ($p < 0.05$) lower perceived healthiness towards amaranth, bottle-gourd and drumstick leaves. Significant association ($p < 0.05$) between demographic characteristics (gender, ethnicity, region of residence) and preferred mode of treatment was recorded. The perceived health benefits and risks of the MFP was observed to significantly ($p < 0.01$) influence the preference category and some misconceptions on the therapeutic values of the MFP were also noted. The FL value (65%) indicated that bitter melon was the most accepted herbal remedy to manage diabetes (ICF = 0.99). As a first attempt in Mauritius, this study has provided baseline data for future studies geared towards the therapeutic benefits of common MFP. This study has also contributed towards understanding the consumption pattern of local MFP which could offer great potential in improving the implementation of public-health programmes aimed at managing diseases.

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1. Introduction

The complex physiological functioning of the human body and its interactions with individual food to influence health has generated a range of up-to-date scientific coverage (Lobo et al., 2010). Though pharmacotherapy still remains important in the treatment of human pathologies, sound nutrition is another key determinant in disease prevention and treatment. Indeed, many case–control and prospective studies have demonstrated a strong association between daily consumption of plant-based foods such as fruits, vegetables, legumes, nuts and even whole grains with lowered risk of certain chronic diseases and increased life expectancy (Ortega, 2006; Krupa, 2008; Leonti, 2011).

In attempting to investigate the various mechanisms by which food plants provide protection to the body, health experts have identified the presence of a range of bioactive compounds which are referred to as phytochemicals. This was the impetus that drove the conception of the term 'functional food', also expressed in a variety of terms like 'pharmafoods', 'medifoods', 'vitafoods' or 'medicinal foods' (Krupa, 2008). Medicinal food plants (MFP) may be defined as those food plants whose consumed parts receive recognition as therapeutic either in traditional medicine, ethnomedicine or biomedicine (Rivera et al., 2010). However, it is important to note that use of MFP to treat/prevent illnesses is not a new phenomenon. The value of this therapeutic approach has long been supported by traditional medicinal systems. Countries like Europe, India and China have historical and modern written texts that have given the possibility of tracing back the pharmacological usage of food plants (Leonti, 2011). Today, with the public health crisis of chronic diseases and rising cost of pharmaceuticals, there is a resurgence of public interest in traditional food plants (Tachjian et al., 2010). This change in attitude and perception varies from individual to individual and is shaped by many factors, both personal and environmental.

The Mauritian population has a long-standing tradition in the use of traditional MFP. Such interest stems from an existing culture and many traditional recipes are still prepared from plant materials and sold in several markets on the island (Mootoosamy and Mahomoodally, 2014). Until now, in Mauritius several laboratory based studies have aimed at identifying and demonstrating the potential health effects of various plant foods, commonly used as dietary adjuncts, on various pathologic pathways and organisms (Subratty et al., 2005; Kotwaroo et al., 2006; Mahomoodally et al., 2010, 2011, 2012; Mahomoodally, 2013). However, empirical findings pertaining to attitudes, beliefs or perceptions of the local population on MFP for their specific health or medicinal properties remain scarce. In this respect, it is important to address the social perspective of these MFP and understand how they are commonly used. The aim of this study was to analyse the attitudes, perceptions, consumption pattern, culinary and medicinal uses of common MFP by the people in Mauritius.

2. Methodology

2.1. Medicinal food plants studied

The seven MFP included in the present study are summarised in Table 1. Based on their availability, these food plants were identified as being commonly used by the local population.

2.2. Questionnaire design and data collection

Participants aged 30 years and above were included in the present study as older Mauritians have previously been reported to be more knowledgeable in relation to the use of medicinal plants (Mootoosamy and Mahomoodally, 2014). The resident population aged 30 years and above in July 2013 was estimated to be around 697, 661 (CSO, 2013). A representative sample size of this population, at 95% confidence interval was calculated using the Krejcie and Morgan (1970) formula for determining sample size. The calculation was cross-verified with other reports (Daniel, 2011; Zulaikha et al., 2011) and the final sample size rounded to 384 individuals.

A semi-structured questionnaire adapted to the schedule, interest and budget was designed to gather information from respondents. The questionnaire was designed in four parts, comprising both open and closed questions. The questionnaire was piloted on a group of people ($n = 20$) to identify any ambiguities in answering the questions. The piloted questionnaires and participants were excluded from the final survey. People were directly approached on streets, in shops, supermarkets, traditional markets and also in community centres amongst others. The survey was conducted in the native language (Mauritian Creole) and data was collected from 2012 to 2014. The content of the questionnaire is detailed below:

(i) *Respondent's characteristics*. Questions related to demographic factors like age, gender, ethnicity and place of residence. The age groups were later categorised in classes of 10 as reported by Keter and Mutiso (2012). To simplify the response, the name of the place of residence of informants was asked which was then categorised as urban or rural.

(ii) *Consumption pattern and habits of participants*. Data pertaining to the type of MFP consumed by the participants, the frequency of intake, method of use and factors affecting their consumption habit were collected.

(iii) Respondents attitudes and perceptions towards MFP:
- Rating of perceptions on taste using 5-point Likert scale: 1 – "strongly dislike" and 5 – "strongly like".
- Perceived therapeutic value of the food plants were determined by providing list categories of diseases, adapted from the classification by Abouzid and Mohamed (2011).
- An open ended question was included to assess any avoidance of the food plants by any particular group of people.
- Questions on factors contributing to knowledge and preference between food plant and synthetic drug were also included.