Medicinal plants used by the Rastafarian community in Belize

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Abstract
There is an increased focus on the use of medicinal plant products globally due to empirical research carried out on ethnic usage of plants. However, some locally used products that are not fully investigated and documented. Documenting local use of medicinal plants by minority socio-ethnic groups is an important first step in advancing the usage of herbal medicine. Rastafarians are a unique cultural group which has strong belief in medicinal herbal usage. Interviews were conducted among several locally known “herbal healers” in the Rastafarian community of Belize. Rastafarians in Belize are a unique community that comprises of members from other ethnic groups including the Garinagu and Creole. Following the interviews, data was collected on the plants they use, for which ailments and what procedures are undertaken for preparation and application. These plants are used to treat a range of diseases from neurological disorders such as epileptic seizures to urinary tract infections and others being used mainly as aphrodisiacs or soothing menstrual cramps in women. Thirty-four (34) plants were identified taxonomically fitting into 25 different families and the data was organized with each plant’s locally renowned healing ability and procedures. With many of the small and remote villages in Belize not having complete and unrestricted access to medical facilities, most ailments are tended to by these local “herbal healers” irrespective of religion, ethnicity or creed. A survey conducted among the herbal healers indicated that there is need to educate and protect the important medicinal plants as there is gradual depletion of certain important medicinal plant species.

Keywords: Rastafarians, Medicinal Plants, Cultural Practices

Introduction
The use of plants as a healing agent has been passed from generation to generation throughout tribal cultures of the world. The oldest records of use of medicinal plants can be traced as far back as 2,000 B.C in the ancient Indian medical system known as Ayurveda and Siddha medicine as well as ancient Egyptians. Advancement in ethnomedicine was limited because of the difficulty in communication between greatly distanced tribes and human civilizations. Ethnomedicine is known today as the traditional medicine practiced by various ethnic groups and by the indigenous peoples of the world. These medicinal traditions are only passed down orally from generation to generation and are very rarely documented. This poses a threat for the preservation of some of the traditional practices being lost if not permanently recorded. Belize is a small English speaking country in Central America with a population of about 340,000. Belize as a country hosts several ethnic groups including the Garinagu, Mayans, Creole people and Mestizo (Statistical Institute of Belize 2010) [1]. There is also a small population of Rastafarians living in Belize that has seemed to maintain their own form of culture and ethnicity. The Rastafarians have established themselves worldwide with approximately 1 million dedicated individuals to what they refer to as a movement or a way of life. Although to other nations and religions they are classed as a young religion that started in Jamaica around the 1930’s following the coronation of Haile Selassie I as the king of Ethiopia. They also believe him to be the reincarnation of Jesus Christ and have based their faith around the strength and health of the African Diaspora worldwide for unity and strength. The Rastafarians are avid vegetarians (although some make a special exception for fish) and have a great appreciation for plants and herbal use especially their very well-known use for marijuana. However, being that they practice the use and appreciation of herbal use other than that of cannabis, they also rather using herbal medicines rather than modern medicine, which make them one of the prime candidates for the use of ethnomedicine. Notably, marijuana use is not only optional for Rastafari but it is not even completely central to their faith. The Rastafarians will hardly ever enter a hospital because of their belief against the use of western
medicine and believe that it is more a poison than it is for healing. Therefore many of them turn to ethnomedicine for healing of ailments by special preparations, special concoctions or mostly by simply consuming the plant or herb in its most natural form.

In a study conducted by D’Avigdor, et al. (2014) [2] found that a majority of Ethiopians rely on traditional medicine for healthcare. The participants of this study were fully aware that their practices and plants were becoming endangered because of lack of recorded practices and the general lack of conservation of species. It was concluded that there was an urgent need to fully document the medicinal knowledge of herbs in these communities and it should be available to the community for them to be able to pass down this knowledge.

In northwest Ethiopia, Chekole et al., (2015) [3] investigated the medicinal plants of Tara-Gedam and Amba remnant forests of the Libo Kemkem district. Remnant forests are found in areas that have long been converted to agricultural landscapes and have become a refuge for wild plants. A total of 163 medicinal plants and the associated knowledge are more attributed to the elders and healers of the community and although they are known medicinal plants was first recorded in compliance with the data collected from the surveys. During the interview process plant specimens were collected and pictures were taken for scientific identification and classification. Each plant was identified by using available literature and verified with type specimens. The plants were categorized by family and were characterized by the ailment treated, parts used and general description of preparation of plant. The information gathered from the questionnaires were summarized and presented appropriately.

**Methodology**

The data for this study was collected by conducting personal interviews with locally known Rastafarian herbal healers. A total of 7 individual herbal healers were interviewed along with a questionnaire containing 18 questions from a total of 4 villages/towns in 2 different districts (Belize and Toledo districts respectively). The information about the locally known medicinal plants was first recorded in compliance with the data collected from the surveys. During the interview process plant specimens were collected and pictures were taken for scientific identification and classification. Each plant was identified by using available literature and verified with type specimens. The plants were categorized by family and were characterized by the ailment treated, parts used and general description of preparation of plant. The information gathered from the questionnaires were summarized and presented appropriately.

**Results and Discussions**

Thirty four (34) plants were identified taxonomically fitting into 25 different families. Some of the important plant specimens are displayed in Plate 1 and Plate 2. Table 1 summarizes the data including the common name, family, scientific name, healing properties and procedures or preparations for usage. These plants are used to treat a range of diseases from neurological disorders such as epileptic seizures to urinary tract infections and others being used mainly as aphrodisiacs or soothing menstrual cramps in women. In total 28 plants were identified and described. Of these 28 plants, there are a total of 22 different plant families with Fabaceae containing 4 plants, Malvaceae accounting for 3 and each other family only containing one (recorded) species in this list. The majority of these plants were angiosperms with only one plant falling under the gymnosperms and most of which the leaves are used for treating ailments. Considering that Rastafari believe in using all things herbal and do not associate themselves with animal products as much, the making of teas of each medicinal plant is essential. For most woody plants, the bark is used to make teas or drinks and the leaves are usually used in combinations. Common combinations include “Bitters” which is a locally made infusion of several different pieces of bark from different species of trees along with other sticks and the inclusion of either water (which is usually left to sit out in the sun) or alcohol (which is normally set to draw from bark for several days or weeks before consumption). Herbal formulas are very common among the Rastafarians for detoxifying and gall bladder flushes. Similar uses of formulas are also seen in the other traditional medicines (Balick and Cox 1996) [10].
Table 1: Characteristics of herbal plants used by Rastafarians in Belize

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Family Name</th>
<th>scientific name</th>
<th>ailments treated</th>
<th>plant parts used</th>
</tr>
</thead>
</table>
| Mango tree                   | Anacardiacae     | Mangifera Indica  | • Diabetes
• Diarrhea
• Vomiting                                              | Leaves
Fruit (skin)                                      |
| Saw palmetto                 | Areceae          | Serenoa repens    | • Prostate enlargement
• Impotence                                                | Seed                        |
| Contribo                     | Aristolochiaceae | Aristolochia trilobata | • Fatigue
• Immune system boost                                    | Whole plant                     |
| Jackass bitters               | Asteraceae       | Neorolaena lobata L. | • Antibacterial
• Parasites
• Sores                                                  | Leaves                         |
| Gumbo limbo                  | Burseraceae      | Bursera simaruba  | • Urinary tract infection
• Headache
• Colds
• Poison antidote
• Sores/rashes                                            | Bark                           |
| Scoggineal                   | Cactaceae        | Opuntia cochenilleferea | • Fevers
• Headaches                                               | Leaves                         |
| Papaya tree                  | Caricaceae       | Carica papa       | • Parasites
• Malaria                                                  | Seeds
Leaves                                                     |
| Almond (hammond) tree        | Combretaceae     | Terminalia catappa | • High blood pressure                                 | Leaves                         |
| Tree of life                 | Crassulaceae     | Kalanchoe pinnata | • Athletes foot
• Asthma
• Headaches                                               | Leaves                         |
| Sorosi                       | Cucurbitaceae    | Momordica charantia | • Blood cleanse
• Fatigue
• Parasites                                               | Whole plant                     |
| Physic nut                   | Euphorbiaceae    | Jatropha curcas   | • Cooling
• Constipation                                            | Leaves                         |
| Billy webb tree              | Fabaceae         | Acosmium panamensis | • Malaria                                               | Bark                           |
| Stinking toe (bukut) tree    | Fabaceae         | Cassia grandis    | • Blood builder
• Mild laxative                                           | Fruit                          |
| Strong back                  | Fabaceae         | Desmodium adccendens | • Back pain
• Impotency                                               | Whole plant                     |
| Madre de cacao               | Fabaceae         | Gilricidia sepium | • Eye infection                                         | Bark                           |
| Piss-a-bed                   | Fabaceae         | Senna alata       | • Parasites
• Mild purge
• Constipation
• Cooling                                                 | Leaves                         |
| Avocado tree                 | Lauraceae        | Persea            | • High blood pressure
• Fever diarrhoea                                          | Leaves                         |
| Provision tree               | Malvaceae        | Pachira aqua      | • Blood cleanse
• Blood builder                                           | Bark                            |
| Cola nut (from bissicola tree) | Malvaceae      | Cola acuminate    | • Vomiting
• Nausea
• Food poisoning                                           | Seed                            |
| Hibiscus                     | Malvaceae        | Hibiscus rosa-sinensis | • Miscarriages
• Menstrual cramps
• Epilepsy/Seizures                                       | Leaves
Flowers                                                     |
| Cedar tree                   | Meliaceae        | Cedrela odulata   | • Reduce blood clots
• Bruising
• Blood cleanse                                           | Bark                            |
| Moringa                      | Moringaceae      | Moringa oleifera  | • Anti-ageing
• Antioxidant                                              | Leaves                         |
| Eucalyptus                   | Myrtaceae        | Eucalyptus quadrangulata | • Colds
• Enhance lung activity
• Encourage normal digestion                              | Leaves                         |
| Pine tree                    | Pinaceae         | Pinus caribea     | • Urinary tract infection                              | Sap                            |
| Fever (lemon) grass          | Poaceae          | Cymbopogon virtratus | • Immune system build
• Fevers
• Coughs
• Colds                                                   | Whole plant                     |
| Gengwheo                     | Polygalaceae     | Securidaca lanceolata | • Aphrodisiac                                           | Whole plant                     |
| Polly red head               | Rubiaceae        | Hamelia patens    | • Skin rashes and sores
• Menstrual cramps                                         | Whole plant                     |
### Contribo (Plate 1A)
**Scientific Name:** *Aristolachia trilobata*
**Family Name:** Aristolochiaceae
**Description:** Vine plant that grows up to 3 meters long (tall). Vine has a rough bark that peels easily and exhibits a characteristically strong odor. The leaves are dark green with three lobes.
**Traditional Use:** Used for energy or fighting fatigue, increasing appetite and increasing immune system health.
**Preparation:** The Contribo is soaked initially in warm water for at least for 24 hours at room temperature. Half a glass of the resulting tea can be drank once a week for increasing functionality of immune system. For fighting fatigue, a half cup can be consumed when necessary. Note: “Contribo bitters are not recommended to drink everyday as it could be causing more harm than good.”

### Jackass Bitters (Plate 1B)
**Scientific Name:** *Neorolaena lobata L.*
**Family Name:** Asteraceae
**Description:** Herb growing from 1 to 4 meters tall with few stems and numerous branching on each stem. Leaves often have 3 distinctive points and flowers are small and yellow. This plant often grows near recently cleared land or on roadsides.
**Traditional Use:** Used for fighting bad internal bacteria and parasites such as ringworm and beef worm. Also used to treat sores and slow healing wounds.
**Preparation:** One leaf per cup of water is to be boiled to form a tea and 1 to 3 cups recommended daily. For external ailments, a handful of leaved could be boiled in a gallon of water and individual is bathed with this mixture while it is warm (not hot). The liquid from the leaves themselves can be used directly by squeezing and rubbing the leaves on sores.

### Piss-a-bed (Plate 1C)
**Scientific Name:** *Senna alata*
**Family Name:** Fabaceae
**Description:** Shrub growing up to 2 meters tall with many branches and leaves having up to 12 leaflets. It grows in yards and disturbed or disturbed forests. Its distinct flowers are yellow in color and each petal is rolled giving it a bulbous shape.
**Traditional Use:** Cleansing of parasites and mild purge. Also used to relieve constipation and “cooling of blood” (purging the lymph/gland system in the body)
**Preparation:** An entire leaf (all leaflets included) should be boiled in 3 to 5 cups of water and a half cup is to be taken twice a day while drinking plenty of water to relieve constipation as well as purging and removal of parasites.

### Bissicola (Cola Nut) (Plate 1D)
**Scientific Name:** *Cola acuminata*
**Family Name:** Malvaceae
**Description:** Tree growing up to 25 meters in height with dark green glossy leaves. Characteristic rough green seed pods contain the oval shaped nut in multiples of 3. Nut can be red to reddish brown/brown and is easily separated in halves by an uneven margin in the middle.
**Traditional Use:** Relieving food poisoning symptoms and hangovers; essentially treating vomiting and nausea.
**Preparation:** Half of the cola nut is grated and boiled in one cup of water. Half cup of this is taken 3 times a day while symptoms last.
impotence.
Preparation: Leaves of the vine (and sometimes with the vine) is left in hot water to draw for 10 to 15 minutes. At least 3 leaves and 4 inches of vine to 3 cups of water is recommended. This is taken once a day in the morning for fighting impotence and can be combined with other herbs to form a natural aphrodisiac concoction.
Common Name: Strong back (Plate 2C)
Scientific Name: Desmodium aduncens
Family Name: Fabaceae
Description: Herb that grows on roadsides or in yards that is usually low lying but can sometimes stand up straight. Its leaves are rounded and wide and its fruit is a legume that has small hairs which allows it to easily attach onto fur or other fur-like material like clothing.
Traditional Use: For lower back pains and impotency.
Preparation: The entire plant is boiled in water for 10 minutes and consumed as a tea. One cup of tea is taken before every meal for 3 to 5 days to relieve backaches and impotency as well.
Common Name: Pine tree (Plate 2D)
Scientific Name: Pinus caribea
Family Name: Pinaceae
Description: Hard pine that inhabits tropical and subtropical forests. It grows up to 20 meters tall and has a brown, rough woody bark. Its leaves are characteristically needle shaped and rather than fruit its pinecones are used for reproduction.
Traditional Use: Reducing urinary tract infections.
Preparation: The sap is drained from the tree by slicing a part of the bark and collecting at least a cup of the sap. Two tablespoons of sap to one cup of water is enough to boil and make a tea to treat urinary tract infections. This tea should be taken once in the morning and once in the night. It is recommended that a lot of water be consumed as well.

Most of the plant species are known for using leaves while few are known to have (medicinally) useful flowers, fruits and seeds (Figure 1). As well, about 36% of these plant species are medicinally known for their gastrointestinal uses including diarrhea, constipation, stomach cramps and others. 41% is used for building blood or treatments having to deal directly with blood and 17% each to epidermal uses and parasite expulsion respectively (Figure 2). Other uses include treatments for eye irritation, urinary tract infections, (libido) sexual drive increase, breathing disorders (asthma) and headaches/fevers. The local concern among the Rastafari is that people tend to over consume certain medicinally important concoctions which could cause adverse effects. Majority of individuals believe that sharing the knowledge is good, but abuse of knowledge is becoming a growing concern. From information collected within interviews, an estimated 30% to 40% of individuals that seek help from these Rastafari herbal healers are of Creole decent, while the other 60% can vary depending on area but is mostly comprised of the Garinagu and other Rastafari. Traditional medicine is being used commonly among individuals that cannot afford or reach modern medicinal centers easily. This trend is universal across the developing world as reported in many studies [11, 12, 13].

A survey conducted among the Rastafarian healers to obtain information about the plants used, the people who use these products, whether they products are sold or shared for free, how the knowledge is passed on to younger generations. The survey revealed that some of the Rastafarian families have been known as healers for generations, and the information is passed on by sharing the knowledge and selling the products. The survey also revealed that the use of traditional medicine is still common among individuals who cannot afford or reach modern medicinal centers easily. This trend is universal across the developing world as reported in many studies [11, 12, 13].
passed down from mother or grandmother preferably to younger females in the family. The study conducted by D’Avigdor et al. (2014) [3] in Ethiopia also noted this practice of learning from elders as an apprentice. Male practitioners gained knowledge by working as apprentice under experienced elders. One interviewee stated that it took him 22 years to fully perfect the art of healing through plants and prayers. One interviewee expressed his concern that the information was not being passed to other generations or even other individuals because the Rastafarian community in Belize is not a cohesive group. The medicinal knowledge they possess and the awareness they are attempting to spread is communicated from individual to individual. Although it doesn’t take much formal schooling to be well versed in ethnomedicine (at least from a local perspective) the Rastafarian believe that one must be chosen to follow this particular path. Most of the practitioners surveyed stated that “all medicinal herbs used should be done with prayer”. The Rastafarian community strongly believes that spiritual faith plays a critical role in the healing process. The prayer is equally important as the medicinal plant. The healers had special reverence to the plants they used and the environment from where they obtain their plants. Most plants were available within their immediate neighborhood; some require hiking into the mountains and forests. Some healers stated that there is a general depletion of available medicinal plants and certain plant species such as “Contribo” are getting scarce due to habitat destruction. It was stressed that many of the plants that are used mainly as aphrodisiacs are being overused while others which are considered to be more medically beneficial are very seldom talked about. Plants that are used in treating sexual dysfunction or disorders are also medically beneficial are very seldom talked about. Plants that are used in treating sexual dysfunction or disorders are also reported elsewhere from India by Marandi et al (2015) [14] and Rana et al (2012) [11]. Some other plants that are not easily available include the “Gengwheo” and the “Chiney root”.

According to Balick and O’Brien (2004) [7] the “Contribo” is not the only medicinally valuable plant that has been affected by deforestation. Other plants of medicinal significance include “Provision Bark” and “Billy Webb” has also been victims of the riparian deforestation and over exploitation of natural resources. Due to the dependency of the poor and vulnerable population for the herbal medicine to cure many of the ailments, there is a critical need to conserve the biodiversity [15,16].

Conclusions
The Rastafarian community in Belize is very small and hence the medicinal knowledge they possess as well as the principles and practices could be lost over time. This study made an effort to document the herbal knowledge of this unique community in Belize. Further studies can be conducted to understand the cross cultural knowledge dissemination among various culture groups in Belize.

References