



The importance of *botellas* and other plant mixtures in Dominican traditional medicine

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ABSTRACT

Ethnopharmacological relevance: Plant mixtures are understudied in ethnobotanical research.

Aim of the study: To investigate the importance of plant mixtures (remedies consisting of at least two plants) in Dominican traditional medicine.

Materials and methods: A Spanish language questionnaire was administered to 174 Dominicans living in New York City (NYC) and 145 Dominicans living in the Dominican Republic (DR), including lay persons (who self-medicate with plants) and specialists (traditional healers). Plants were identified through specimens purchased in NYC *botánica* shops and Latino grocery shops, and from voucher collections.

Results: The percentage of mixtures as compared to single plants in plant use reports varied between 32 and 41%, depending on the geographic location (NYC or DR) and participant status (lay person or specialist). Respiratory conditions, reproductive health and genitourinary conditions were the main categories for which Dominicans use plant mixtures. Lay persons reported significantly more mixtures prepared as teas, mainly used in NYC to treat respiratory conditions. Specialists mentioned significantly more *botellas* (bottled herbal mixtures), used most frequently in the DR to treat reproductive health and genitourinary conditions. Cluster analysis demonstrated that different plant species are used to treat respiratory conditions as compared to reproductive health and genitourinary conditions. Interview participants believed that combining plants in mixtures increases their potency and versatility as medicines.

Conclusions: The present study demonstrates the importance and complexity of plant mixtures in Dominican traditional medicine and the variation in its practices influenced by migration from the DR to NYC, shedding new light on the foundations of a particular ethnomedical system.

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1. Introduction

Traditional medicine in the Dominican Republic is a reflection of the cultural history of the island and the diverse ethnic origin of its inhabitants (Bonnely de Calventi et al., 1985). It represents a syncretic blending of Taino indigenous, African, and European traditions that includes elements of Catholicism, African tribal practices and indigenous heritage (Babington et al., 1999). It operates with concepts such as the hot–cold classification of illnesses and plant remedies, the humoral functioning of the body, the distinc-

tion between spiritual versus physical disease etiologies and the use of plants, psalms, saints, traditional healers and midwives for maintaining health and well-being, and curing illness. It is a holistic medicine that considers the patient in relation to a multitude of factors, including the patient's personal history, status within the community, and the natural, social and spiritual environment. Concepts such as balance, stability and steadiness are central to a person's health. Menstruating and pregnant women, young children and adolescents who are going through physical development are seen as weak (*débil*) and in danger of getting sick. A healthy body is one that is "balanced, clean and sweet" (*balanceado, limpio y dulce*). In order to restore a body that is out of balance or to frighten off evil (*espantar el mal*) there exist plants with hot, cold, sour, bitter, salty, sweet, sticky or slimy properties (Brendbekken, 1998).

The use of plants for health care is a cultural keystone practice in the Dominican Republic (DR). This is a traditional skill or practice that is vital to sustaining a culture and plays a key role in defining

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¹ This paper is dedicated to the memory of Daisy Castillo, respected colleague and former Director of the Botany Department of the Jardín Botánico Nacional Dr. Rafael Ma. Moscoso, Santo Domingo, Dominican Republic.

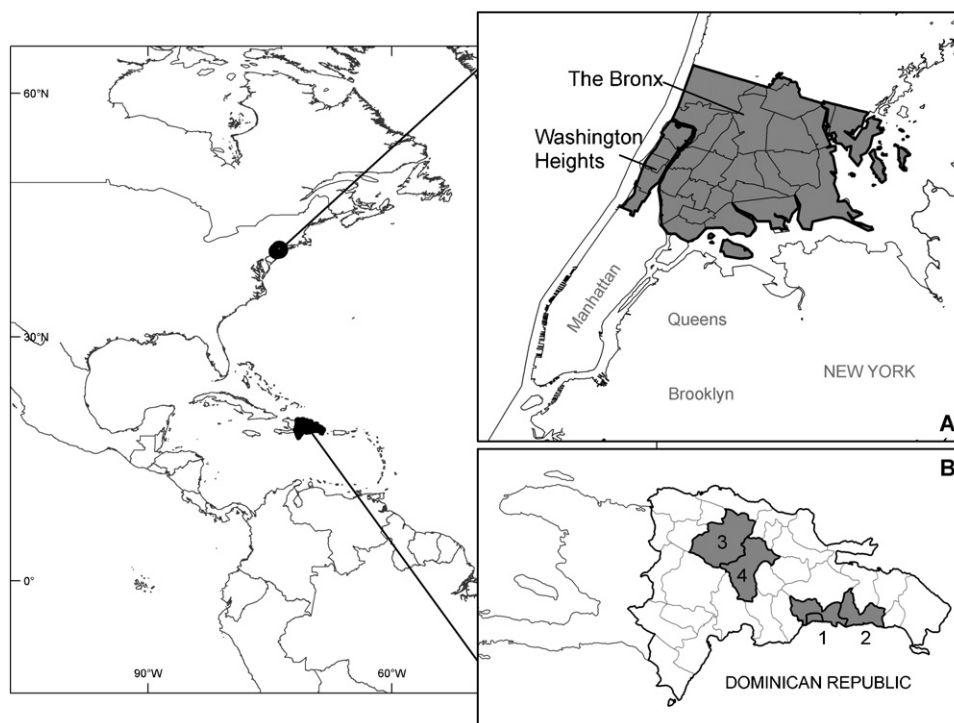


Fig. 1. Map of the study areas. Interviews were conducted with 174 Dominicans in the neighborhoods of Washington Heights and the Bronx in New York City (A) and with 145 Dominicans in four provinces in the Dominican Republic: (1) Distrito Nacional (Santo Domingo); (2) San Pedro de Macoris; (3) Santiago; and (4) La Vega (B).

cultural identity (Brosi et al., 2007). Medicinal plants are used for self-medication by lay persons or for healing patients by specialist healers (called *curanderos* or *curiosos*) and continue to play an important role on the island today (Robineau, 1986; Germosén-Robineau, 1991, 1995, 1997, 2005; Polanco et al., 1998; Peguero et al., 2001; Peguero, 2002) as well as abroad where the practice remains salient even after Dominicans migrate to the United States (Allen et al., 2000; Balick et al., 2000; Ososki et al., 2002; Reiff et al., 2003; Fugh-Berman et al., 2004; Vandebroek et al., 2007; Ososki et al., 2007).

One popular Dominican herbal preparation is known as the *botella*, a bottled herbal mixture that consists of a combination of plant parts or exudates from different plant species, culinary spices and frequently also non-plant ingredients. Other types of traditional Dominican mixtures that combine plants in formulas and recipes of varying complexities have also been reported, including teas, *bebedizos* (medicinal brews or concoctions) and aromatic baths (*baños*) (Avila Suero, 1988; Brendbekken, 1998; Ososki, 2004).

The use of traditional plant mixtures, formulas or formulations has been described in detail for Cuba (Hernández Cano and Volpato, 2004), including the Haitian diaspora in Cuba (Volpato et al., 2009a,b), and is mentioned in studies about herbal medicine use in Martinique and Trinidad (Longuefosse and Nossin, 1996; Clement et al., 2005) as well as in anthropological, ethnobotanical and popular literature about the DR, Puerto Rico or the Dominican community in New York City (Avila Suero, 1988; Brendbekken, 1998; Benedetti, 2001; Ososki et al., 2002; Ososki, 2004). However, no detailed information exists in the published literature about the prevalence of these mixtures versus single-plant remedies in the ethnomedicinal traditions of Caribbean cultures or their migrant communities.

Here, we compare the proportion of mixtures in plant use reports from lay persons and plant specialists in the DR with those from Dominicans who migrated to New York City (NYC). First, we analyze the prevalence of multi-plant formulations versus single-

plant remedies in our data and describe the different types of plant mixtures that exist, with a special emphasis on *botellas*. Then we review the health conditions that are commonly treated with mixtures, and the plant species commonly found in those mixtures. Second, a cluster analysis, applied to a matrix of health conditions and their corresponding plant mixtures used as remedies, is conducted to investigate the ethnoclassification of health conditions. We also draw upon qualitative data from interviews with study participants to explain the beliefs associated with the use of plant mixtures in Dominican traditional medicine. The hypotheses tested in this paper are: (1) plant mixtures are reported more often by plant specialists (traditional healers) than plant generalists (lay persons who self-medicate with plants); (2) the prevalence of using mixtures versus single-plant herbal remedies depends on the type of health condition; and (3) related health conditions are treated with similar combinations of plants.

2. Material and methods

2.1. Survey participants

The present study is part of a larger survey of Dominican ethnomedicine that was conducted in NYC and the DR in 2005–2006 (NIH grant # R21 AT001889; PI: Michael J. Balick). Institutional Review Board (IRB) approval for this study was granted by the City University of New York (IRB# 04-06-0599). Fig. 1 presents a map of the study areas. Fieldwork in New York took place during the summer of 2005 in Washington Heights and the Bronx, neighborhoods where most Dominicans reside (Fig. 1A). Fieldwork in the DR was conducted from February to May 2006 in four provinces: (1) Distrito Nacional (Santo Domingo); (2) San Pedro de Macoris; (3) Santiago; and (4) La Vega (Fig. 1B). The provinces chosen in the DR matched the provinces where most participants originated from in the NYC study. Participants were recruited through convenience and snowball sampling methods. Inclusion criteria were: (1) age

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