

# Plants Used by a *Quilombola* Group in Brazil with Potential Central Nervous System Effects

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This study focused on an ethnopharmacological survey among a group of Brazilian *Quilombolas* (descended from runaway slaves living in hideouts up-country) whose therapeutic practices involve a combination of healing ceremonies and prescription of medicinal plants consisting of the use of, at least, 48 plants with possible effect on the central nervous system (CNS), cited in 53 formulas prescribed for 17 therapeutic indications, the main ones being: to fortify the brain, for insomnia, as a sedative, for insanity, weight loss, and rejuvenation. The formulas consist of one to ten plants, and each plant may be recommended for up to seven different therapeutic indications, with evidence of non-specificity in the use of plants in this culture. Of these 48 plants, only 31 could be identified to the species level as belonging to 20 taxonomic families, with the Asteraceae, Malpighiaceae, Cyperaceae, and Myrtaceae as the most important families. Only eleven of these species have been previously studied and appear in scientific literature. Some of these plants are at present under study in the Department of Psychobiology of the Federal University of São Paulo. Copyright © 2004 John Wiley & Sons, Ltd.

**Keywords:** ethnopharmacology; *Quilombolas*; central nervous system; Brazilian cerrado savannahs; Brazilian pantanal wetlands; traditional medicine.

## INTRODUCTION

The exploitation of plant species with medicinal potential in Brazil has been relatively insignificant. Ten years ago Plotkin (1991) reported that 99.6% of the 55,000 angiosperm species – estimated in the Brazilian territory – were still unknown to the scientific community from the phytochemical and pharmacological point of view. Until now, practically nothing is known about the complex flora of the pantanal wetland biome in an area of 139,111 sq. km, almost entirely within Brazilian territory (Adamoli, 1986).

This study focused on an ethnopharmacological survey among a group of nearly 300 *Quilombolas*, descendants of Afro-Brazilian runaway slaves in an area of 13,620 hectares on the borders of the Poconé pantanal wetlands in Mato Grosso State – Sesmaria or Quilombo Mata-cavalos (in the Municipality of Nossa Senhora do Livramento, see Fig. 1). Their forebears, African slaves who arrived in Sesmaria between 1804 and 1883, originated predominantly from the coast of West Africa (Rosa, 1993; Voekš, 1997). For years, they have been represented by spiritual and political leader Cezário Sarat, 83 years old, a self-acclaimed esoteric-‘umbandista’ (See Table 1) because he holds the knowledge of the medicinal plants in this region.



**Figure 1.** Site of the Sesmaria Mata-Cavalos, in the State of Mato Grosso, Brazil.

## BACKGROUND AND METHODS

The fieldwork was conducted between 1999 and 2001, applying methods used in anthropology and botany. Informal interviews (Alexiades, 1996) were carried out with residents of Sesmaria Mata-Cavalos to determine who people sought out in case of illness. Cezário and three other residents of Sesmaria were selected and participated in the interviews. We obtained written permission from the Ethics Committee of the Federal

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**Table 1. Glossary based on observation and interviews with healers of the Sesmaria Mata-Cavalos, to define the terms used in local therapeutic practice**

Therapeutic indications (present in Fig. 2)	Possible connection between effects shown by plants cited for these therapeutic indications and those of conventional drugs
To fortify the brain	Adaptogen
For insomnia	Hypnotic
As a depurative	Blood thinner
For weight loss	Anorectic or thermogenic
As a sedative	Anxiolytic
For rejuvenation	Adaptogen
For insanity	Neuroleptic
For headaches and body pain	Analgesic
For leg pain	Analgesic
To make the body pure and light	Hallucinogen
To alter the mind	Hallucinogen
For sexual attraction	Aphrodisiac
To enhance vision	Hallucinogen
To energize	Tonic/adaptogen
For muscle building	Anabolic
To stimulate the appetite	Orexigenic
To clarify the mind	Hallucinogen
<b>Other terms</b>	<b>Interpretation</b>
Esoteric-'umbandista'	Status that the 'umbanda' practitioner attributes to himself for accumulating extensive experience in healing activities with the help of the spirits and for being a great teacher to aspiring mediums.
Extract	Consists of storing parts of one or more plants immersed in an alcoholic beverage for one or two weeks.

**Table 2. Number of plants utilized by healers of the Sesmaria Mata-Cavalos: therapeutic indication and formulas prepared from them**

Possible action	Exclusively on the CNS	Other systems*	CNS and other systems	TOTAL
Plants	15 (18,3%)	34 (41,5%)	33 (40,2%)	82 (100%)
Therapeutic indications	17 (31%)	38 (69%)	–	55 (100%)
Formulas	53 (41%)	76 (59%)	–	129 (100%)

\* inflammatory processes, snake bites, contraception, and gastro-intestinal, urogenital and broncho-pulmonary problems.

University of São Paulo and from the residents of Sesmaria to access *Quilombola* knowledge and botanical material.

Personal and ethnopharmacological aspects of the interviewees were obtained with the use of questionnaires with open questions in semi-structured interviews (Martin, 1995) where the following topics were addressed: line of descent, age, level of schooling, and the status of each interviewee in his/her community (personal data); composition of a given formula, its respective therapeutic indication, doses, method of preparation and counterindications (ethnopharmacological data). In addition, a glossary was compiled using information obtained during the interviews, through participant observation and ethnographic techniques (Foote-Whyte, 1990; Alexiades, 1996), to translate therapeutic terms used locally into current medical jargon (Table 1).

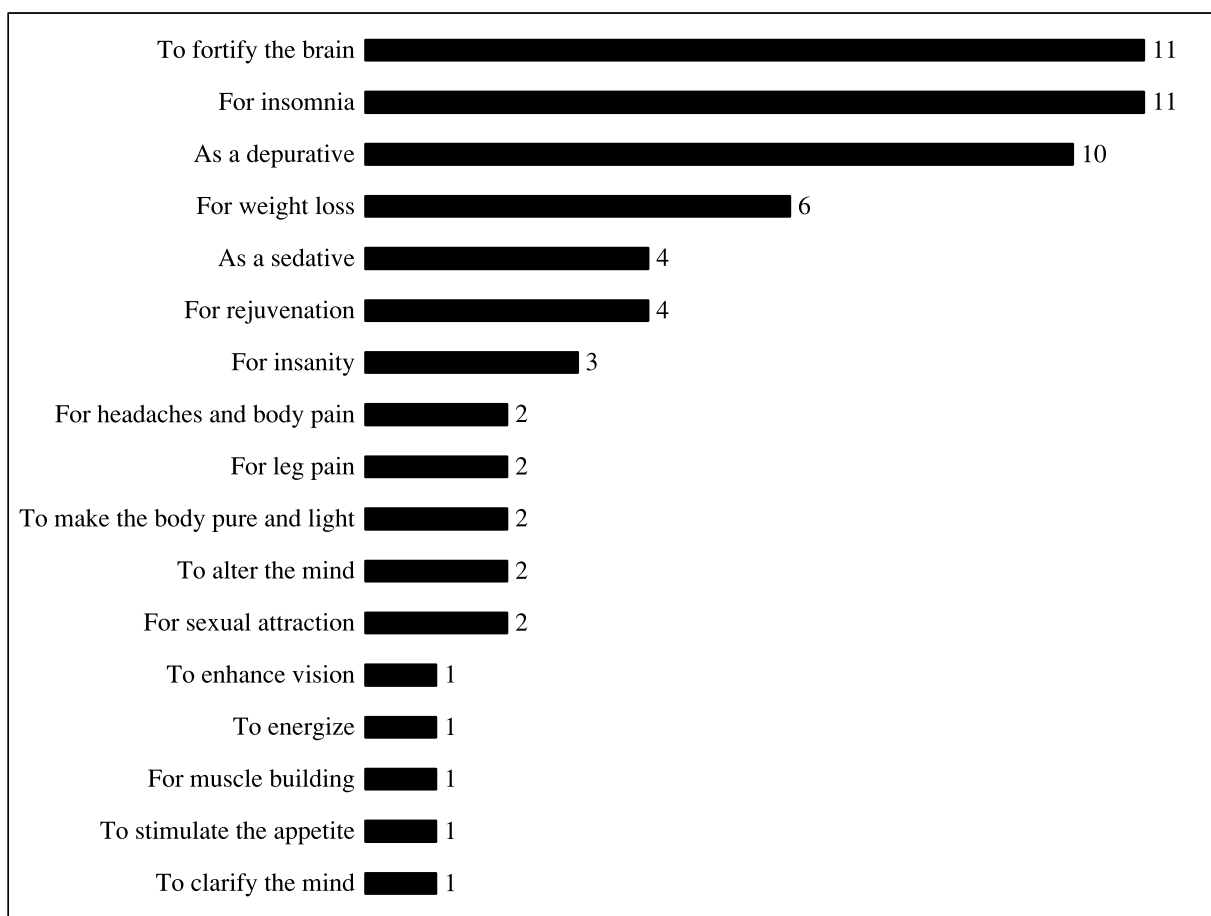
Samples of each plant cited by the interviewees were collected in compliance with methods recommended by Lipp (1989) and the plants were identified at the São Paulo State Botanical Institute (IBt-SP), where the vouchers were deposited. Phytochemical and pharmacological research was conducted to verify the exist-

ence of reports published during the last 35 years for those species that may possibly have some effect on the central nervous system (CNS) and that are under study in the Department of Psychobiology.

## RESULTS AND DISCUSSION

The healers use 48 plants for therapeutic indications relating to the CNS. Table 2 shows that 15 of these were cited as exclusive to this system, with 33 listed as both for the CNS and for other uses.

Table 2 shows that the nosologic world of healers covers 55 different therapeutic indications, with the use of plants for different purposes (to combat specific pathologies; for accidents produced by animals; or on specific demand such as in the case of plants used for 'clear thinking', for instance). Of the 55 therapeutic indications, 17 correspond to those seemingly related to the CNS (Fig. 2). Healers may prescribe more than one formula for the same therapeutic indication: 53 formulas generally involving the use of one to ten plants, were ordered for 17 indications corresponding to the



**Figure 2.** Number of plants cited for each of the seventeen therapeutic indications possibly involving the CNS. (Table 1: an attempt to establish a correlation between these therapeutic indications and possible accepted clinical effects).

CNS, with some plants indicated for up to seven different uses. These data point to the non-specificity of the plants used.

The 48 plants with alleged effect on the CNS belong to 20 taxonomic families, mostly Asteraceae (four species recorded), Malpighiaceae (three species recorded), Cyperaceae (three species recorded), and Myrtaceae (three species recorded). Of these plants, 31 were identified to the species level and 17 only to the genus. Among the 31 species identified, 25 are native to the Brazilian territory, five are exotic, and one is cosmopolitan.

Almost all of these plants are utilized in rituals, mainly in healing ceremonies. Two of the therapeutic indications related to the CNS (Fig. 2) are described as follows:

#### To fortify the brain

Three formulas were cited involving the use of 11 species used to fortify the brain, including the following taxonomic families: Phytolaccaceae, Rutaceae, Myrtaceae, Bignoniaceae, Monimiaceae, Lamiaceae, Moraceae, Rutaceae, Asteraceae, and Apiaceae. One of these formulas is in the form of a cigarette known as 'Tira Capeta' (Removing the Devil), to be smoked by the healer as well as by the patients, including children. The cigarette produces a strong, pleasing aroma, and comprises eight different plants, several of them arom-

atic. Cigarettes are smoked by persons suffering from a mental breakdown caused by overwork and are also used by children and teenagers to improve learning abilities in school: according to the interviewees, the cigarettes fortify the head. The other two formulas are consumed in the form of an extract prepared with the roots of the remaining three plants, mostly by adult patients, for the same purpose.

#### For Rejuvenation

The three formulas utilized as rejuvenators involve four species which belong to the Ochnaceae, Sterculiaceae, and Malpighiaceae families. Such plants are utilized by elderly persons and act in various ways: to increase sexual desire and performance, to 'thin' the blood, enhance memory, and prevent diseases by strengthening the body. Based on reports, persons who utilize them feel stronger, their nerves are sharper and they feel more pleasure. This kind of effect closely mimics that described for adaptogen plants (Wagner *et al.*, 1994). One of the plants utilized in the above-mentioned formulas is the 'Nó-de-Cachorro' (*Heteropterys aphrodisiaca* O. Mach.), a species already studied (Mattei *et al.*, 2001; Galvão *et al.*, 2002) and shown to be effective in improving memory in aged rats subjected to chronic treatment.

As seen in Table 3, among the 31 species identified, 11 have been previously studied and appear in the

**Table 3. Scientific studies found in literature for 11 of the 31 species cited by the *Quilombolas* (with a possible effect on the CNS). In four species marked with an asterisk (\*), *Quilombola* use bears some resemblance to the effects/action described in the pharmacological studies**

Scientific name (family) Voucher number	<i>Quilombolas'</i> use	Previous studies	Phytochemical and pharmacological studies
1-* <i>Cybastax antisiphilitica</i> (Mart.) Mart ex DC. (Bignoniaceae) Rodrigues 510	For headache	Martins <i>et al.</i> , 1994	Analgesic
2-* <i>Cymbopogon citratus</i> (DC.) Stapf (Poaceae) Rodrigues 499	To decreases blood pressure; To calm	Carbajal <i>et al.</i> , 1989; Palmieri, 2000	Hypotensive; anxiolytic
3-* <i>Heteropterys aphrodisiaca</i> O. Mach. (Malpighiaceae) Rodrigues 516	For rejuvenation	Mattei <i>et al.</i> , 2001; Galvão <i>et al.</i> , 2002	Antioxidant; increases memory
4-* <i>Petiveria alliacea</i> L. (Phytolaccaceae) Rodrigues 498	To alter the mind	Morales <i>et al.</i> , 2001	CNS depressor
5- <i>Brosimum gaudichaudii</i> Trec. (Moraceae) Rodrigues 614	**	Vilegas <i>et al.</i> , 1993; Aguiar <i>et al.</i> , 1988	Phytochemical data; antibiotic
6- <i>Citrus sinensis</i> (L.) Osbeck (Rutaceae) Rodrigues 897	**	Trovato <i>et al.</i> , 1996	Phytochemical data
7- <i>Erigeron bonariensis</i> L. (Asteraceae) Rodrigues 615	**	Silva <i>et al.</i> , 1985	Phytochemical data
8- <i>Guazuma ulmifolia</i> Lam. (Sterculiaceae) Rodrigues 535	**	Navarro <i>et al.</i> , 2003; Hor <i>et al.</i> , 1995;	Antioxidant; Antisecretory
9- <i>Lafoensia pacari</i> A. St.-Hil. (Lythraceae) Rodrigues 500	**	Solon <i>et al.</i> , 2000; Menezes, 2002	Antioxidant; antiulcer
10- <i>Senna occidentalis</i> (L.) Link (Fabaceae) Rodrigues 515	**	Barth <i>et al.</i> , 1994; Palsson and Jaenson, 1999	Poisonous effect on cattle; mosquito repellent action
11- <i>Casearia sylvestris</i> Sw. (Flacourtiaceae) Rodrigues 504	**	Ruppelt <i>et al.</i> , 1991	Antinflammatory

\*\* The effects indicated by the *quilombolas* do not match those described in the scientific literature.

scientific literature: four of these have also shown some resemblance between the indication given by the interviewees and accounts published. Thus, *Petiveria alliacea* L. (Phytolaccaceae) is used by the interviewees to alter the mind. Its CNS depressor effect was confirmed by Morales *et al.* (2001) who observed reductions in spontaneous locomotor activity and in exploratory behavior, with increased sodium pentobarbital-induced sleeping time. In the same way, *Quilombola* use of *Cybastax antisiphilitica* (Mart.) Mart ex DC. (Bignoniaceae) for headache, is close to the analgesic effect described by Martins *et al.* (1994). *Cymbopogon citratus* (DC.) Stapf (Poaceae), is a very interesting example where two of the *Quilombola* uses – to decrease blood pressure and to calm someone – bear some resemblance, respectively, to the studies of Carbajal *et al.* (1989) and Palmieri (2000). On the other hand, Palmieri's data are not supported by three other studies (Carlini *et al.*, 1986; Formigoni *et al.*, 1986; Leite *et al.*, 1986). Palmieri (2000) observed an anxiolytic effect utilizing the essential oils of the plant; the author tries to explain these results in that some active principles present in essential oils could have been lost during the abafado (extract utilized in these studies).

The *Quilombola* indications of the seven remaining species in Table 3, do not match data in the scientific literature, as per those observed with *Lafoensia pacari* A. St.-Hil (Lythraceae), which present antioxidant (Solon *et al.*, 2000) and antiulcer effects (Menezes, 2002). On the other hand, a poisonous effect on cattle (Barth *et al.*, 1994) and mosquito repellent action (Palsson and

Jaenson, 1999) were described for *Senna occidentalis* (L.) Link (Fabaceae). An antioxidant effect was also described for *Guazuma ulmifolia* Lam. (Sterculiaceae) (Navarro *et al.*, 2003). Finally, as seen in Table 3, the remaining seven species possess effects which also do not match the *Quilombola* indication.

As in earlier publications (Rodrigues, 1998; 2001), the remaining 20 plant species identified here are not disclosed in the course of this study to preserve the intellectual property of the study group. Although some of the species cited by the *Quilombolas* are also known to other Brazilian folk groups, the specific use attributed to the plants is different: for example, one species defined by the *Quilombola* as analgesic is used by the Brazilian Indians as a hypnotic. Other authors also endorse the right of folk societies to obtain adequate compensation for their knowledge (Swanson, 1995; Greaves, 1994); it has been suggested that information on these species should be withheld in order to ensure the above-mentioned compensation (Laird *et al.*, 2002). In this publication, only 11 out of 31 species identified are included in Table 3, published information on them being available. Information on the 20 other species has been withheld since they have never been mentioned in the scientific literature.

The therapeutic polypharmacy practices examined in this study are similar to those observed among the ribeirinhos (river-dwellers) (Amorozo, 1993) and other Afro-descendants (Camargo, 1988; 1998) in Brazil; in Africa among the Yorubas (Verger, 1996; Ajaiyeoba *et al.*, 2003); in India, in the therapeutic practices of



Ayurveda (Wu *et al.*, 1998; Palani *et al.*, 1999), and among the Chinese (Tsuji *et al.*, 1994), who use formulas consisting of a large number of plants. The Department of Psychobiology of the Federal University of São Paulo is investigating some of the plants listed in this study from a pharmacological point of view.

The predominance of plants with uses related to the CNS noted in this study, is also observed among other groups of Afro-descendants (Camargo, 1988; Voeks, 1997; Camargo, 1998) and Indians (Rodrigues, 2001) in Brazil. This could be the result of the religious nature of their healing rituals where plants that alter perception are sacred, because they are believed to facilitate communication with the spirits. Furthermore, these cultures have not allowed themselves to be suppressed by Christian domination (Ribeiro, 1996) which repudi-

ated the use of plants with such characteristics in other Brazilian cultures, such as the ribeirinho river-dwellers (Rodrigues, 1998) and the coastal caiçaras (Begossi *et al.*, 1993).

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