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Survey of medicinal plants Utilization At Federal University Of Parana, Palotina, PR, Brazil

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Levantamento do uso de plantas medicinais na Universidade Federal do Paraná, Palotina –PR, Brasil

Suzana Stefanello[1], Carina Kozera [2], Bettina Monika Ruppelt [3], Daniela Fumagalli[4], Mariele Pasuch de Camargo[5], Dircelei Sponciado[6]

ABSTRACT

Medicinal plants represent an important alternative for the treatment and/or prevention of diseases in people's lives, not only due to their effectiveness in therapeutic action but also because of their simultaneous integration as part of a people's culture. In this context, this study aimed to gather data on the use of medicinal plants by employees of the Federal University of Paraná - Palotina Sector, aiming to retrieve information on their popular use to subsequently support extension actions with the university's cleaners. Semi-structured questionnaires on the use of medicinal plants were administered to teachers, administrative staff, and outsourced employees responsible for maintenance, gardens, and cleaning of the University, totaling 107 respondents. It was found that 72% use medicinal plants, with the majority using them because they are a natural product and acquired knowledge from family tradition. Lemon balm, mint, boldo, chamomile, guaco, and marcela were the most cited plants, and colds, flu, colic, and migraines were the most frequently treated diseases and/or discomforts with medicinal plants. Based on the results, extension activities were planned, such as lectures, dynamics, practical activities, and visits to the university's medicinal garden. The activities were initially aimed at cleaning staff, as they prepared teas daily for the other participants in the study. The exchange of knowledge, the acquisition of new knowledge, and the interaction between students, teachers, and the

[1] Professor at the Biodiversity Department, Palotina Sector, UFPR, Rua Pioneiro, 2153, 85950-000 - Palotina, PR, Brasil. E-mail: sstefanello@ufpr.br. Orcid:https://orcid.org/0000-0001-7744-0192
[2] Professor at the Biodiversity Department, Palotina Sector, UFPR, Rua Pioneiro, 2153, 85950-000 - Palotina, PR, Brasil. E-mail: carinakozera@yahoo.com.br. Orcid:https://orcid.org/0000-0003-3051-4750
[3] Professor at the Biodiversity Department, Palotina Sector, UFPR, Palotina – PR, Brasil. Orcid: https://orcid.org/0000-0003-1472-6948
[4] Biologist, Graduate of the Biological Sciences Course, Palotina Sector, UFPR, Palotina, PR, Brasi
[5] Biologist, Graduate of the Biological Sciences Course, Palotina Sector, UFPR, Palotina, PR, Brasil
[6] Biologist, Laboratory Technician, Palotina Sector, UFPR, Palotina, PR, Brasil.

target audience involved were the most evident aspects during the activities, contributing to the education of the students and the improvement of people's quality of life.

Keywords: extension, popular knowledge, therapeutic indications.

RESUMO

As plantas medicinais representam uma alternativa de tratamento e/ou de prevenção de doenças de grande importância na vida das pessoas, não somente por sua eficácia na ação terapêutica, mas também por se inserir simultaneamente como parte da cultura de um povo. Neste contexto, o presente trabalho teve como objetivo levantar dados sobre a utilização de plantas medicinais pelos funcionários da Universidade Federal do Paraná - Setor Palotina, buscando resgatar informações sobre o seu uso popular para posteriormente subsidiar ações extensionistas com as zeladoras da Universidade. Foram aplicados questionários semi estruturados sobre a utilização de plantas medicinais aos docentes, técnico-administrativos e funcionários terceirizados responsáveis pela manutenção da estrutura, jardins e da limpeza da Universidade, totalizando 107 entrevistados. Detectou-se que 72% fazem uso de plantas medicinais, sendo que a maioria utiliza por ser um produto natural e que obtiveram o conhecimento a partir da tradição familiar. A cidreira, hortelã, boldo, camomila, guaco e a marcela foram as plantas citadas como as mais utilizadas, e o resfriado, a gripe, cólicas e a enxaqueca como a doença e/ou mal-estar mais frequentemente tratados com plantas medicinais. A partir dos resultados foram planejadas atividades de extensão, como palestras, dinâmicas, práticas e visitas ao horto medicinal da universidade. As atividades foram direcionadas numa primeira fase às funcionárias responsáveis pela limpeza, uma vez que preparavam chás diariamente para os demais envolvidos no estudo. A troca de saberes, a aquisição de novos conhecimentos e a interação entre alunos, professores e o público-alvo envolvido foram os aspectos mais evidentes durante as atividades realizadas, contribuindo para a formação dos alunos e a melhoria da qualidade de vida das pessoas.

Palavras-chaves: extensão, conhecimento popular, indicações terapêuticas

INTRODUCTION

The population employs various practices to treat illnesses and symptoms that jeopardize their health. Despite significant technological advances and noteworthy improvements in healthcare in recent years, the utilization of medicinal plants as a complementary form of treatment remains widespread. A few years ago, the World Health Organization (WHO) estimated that approximately 80% of the world's population

already used and trusted medicinal products of plant origin (BRANDÃO, 2009; BARNES, ANDERSON, PHILLIPSON, 2012).

The use of herbal remedies has been present across all civilizations and throughout history. In Brazil, the use of medicinal plants for treating illnesses is deeply ingrained in indigenous, African, and European immigrant cultures (BRANDÃO, 2009).

In general, access to medication is constrained by economic factors, prompting individuals to seek treatment for their illnesses and alleviate symptoms through more affordable or free means, such as the use of medicinal plants directly harvested from nature (DI STASI, 2007). Moreover, there is a notable inclination among the Brazilian populace to utilize medicinal products derived from plants. The rise in the use of herbal medicines has corresponded to an increased interest among physicians and other healthcare practitioners (DI STASI, 2007).

According to Maciel et al. (2002), popular knowledge regarding the use and effectiveness of medicinal plants notably aids in spreading awareness about the therapeutic potential of these species. It also stimulates interest among researchers in fields like botany, pharmacology, and phytochemistry, thereby enriching our understanding of these plants and increasing their utilization. The scientific validation of the efficacy and safety of many medicinal plants has led to their widespread use as a beneficial and essential therapeutic resource for humanity (REBOUÇAS, 2009).

Throughout the history of pharmacology and medicine, researchers have isolated compounds from medicinal plant species, recognizing them as essential elements for synthesizing hundreds of active substances. This has been achieved through a combination of popular empirical knowledge and insights gleaned from traditional communities. As a result, a substantial body of knowledge has been amassed, underpinning the production of a large portion of the medications available today and serving as the foundation of modern medicine (DI STASI, 2007).

Advanced industrialized nations have dedicated a considerable portion of their investments and scientific research to the responsible utilization of medicinal plants. Their focus is on safely extracting the active compounds and developing commercial medications. Veiga Júnior, Pinto, and Maciel (2005) note that the media in these countries

increasingly advocate for the use of natural products, emphasizing the potential for a longer and healthier life that such products may provide.

For a significant portion of the population, medicinal plants are regarded as natural products free from chemicals, which contributes to their widespread use. However, despite being seen as synonymous with safety and health benefits, it's important to note that many commonly used plants contain substances capable of exerting toxic effects on other living organisms (MENGUE, MENTZ, SHENKEL, 2001; von POSER, 2017). Individual phytotherapeutic components comprise a wide array of chemical constituents (BARNES et al., 2012), making it essential to have a deep understanding of the plants intended for use, as well as the potential adverse effects they may cause (FINTELMANN; WEISS, 2010).

In this context, the state of Paraná stands out, where the cultivation and use of medicinal plants are notably evident (CORRÊA JUNIOR; SCHEFFER, 2004), particularly in the western region due to the longstanding tradition of Italian and German immigrants. Consequently, in recent years, there has been a surge in studies and extension activities related to medicinal plants spearheaded by the Universidade Federal do Paraná (UFPR) at its Palotina campus and initiatives by Itaipu Binacional, through the Programa Cultivando Água Boa (RUPPELT et al., 2015). These efforts aim to enhance understanding and disseminate information, particularly concerning the accurate identification of plants, their properties, and their safe and effective utilization.

In this scenario, the present study aimed to collect data on the utilization of medicinal plants by UFPR - Palotina Campus employees, seeking to retrieve information on the popular use of these plants to later inform extension initiatives involving the university's janitorial staff.

MATERIALS AND METHODS

The current study was conducted between 2010 and 2011 as part of the "Tea Time at Palotina Campus" project, which is a component of the University Extension Program "Plantas Medicinais" at UFPR Palotina Campus, registered under PROEC (Pro-Rectorate of Extension and Culture/UFPR) number 097/10.

Data collection was conducted through interviews, employing a questionnaire crafted with semi-structured questions. The primary aim was to assess the interviewees' profiles and their utilization of medicinal plants. Interviews were directly conducted with all faculty members (49 respondents), technical-administrative staff (33), third-party personnel responsible for maintaining UFPR's infrastructure and gardens (13), and third-party cleaning staff, referred to as janitors (12), amounting to 107 respondents in total.

The questionnaires addressed whether or not medicinal plants were utilized, how the interviewees obtained knowledge about the plants, the therapeutic purposes of their usage, and the diseases that affected employees most frequently.

Following data collection, the information was systematically organized into spreadsheets using the Microsoft Excel program, and from there, tables and graphs were created. Additionally, the AMADO software - Analyse Graphique d'une Matrice de Données (BERTIN; RISSON; CHAUCHAT, 1994) was employed to generate a graph that allows for a comprehensive analysis of the main results.

Subsequently, armed with the collected information—such as the main species utilized by employees, their purposes, and the most common forms of usage—a schedule of extension activities was devised as a means of providing feedback and contributing to the knowledge of the interviewees. The aim of these activities was to offer guidance on species identification, proper methods for preparing and managing garden beds, tea preparation, primary therapeutic indications, and the toxicity of medicinal plants. The janitors were invited to participate in these activities as they were more directly engaged with medicinal plants, through their daily preparation of teas offered to other institution staff.

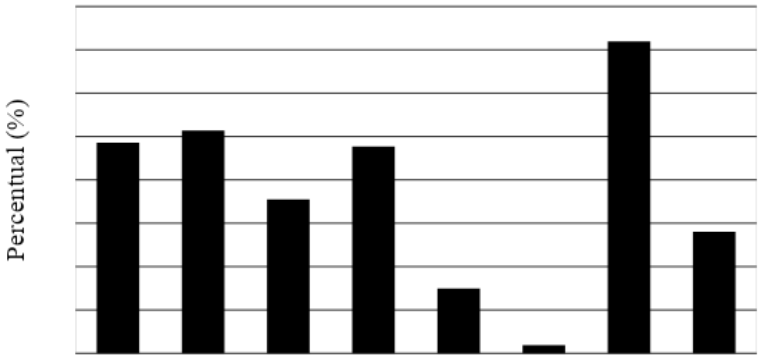
RESULTS AND DISCUSSION

Data analysis showed that 72% of the respondents (77 individuals) use medicinal plants (Figure 1), a finding in line with the World Health Organization's (WHO) data. The WHO reports that despite the advances in modern medicine, a large portion of the population in developing countries, like Brazil, relies on traditional medicine to address

primary ailments, with 85% of this population seeking basic healthcare from these plants (BRASIL, 2006).

Out of the 107 interviewees, 55 (51.5%) were women, with 42 of them (76.3%) reporting the use of medicinal plants in their daily lives. Regarding men (52; 48.5%), 35 (67%) affirmed their use of these plants (Figure 1). According to Marchese et al. (2009), gender-related knowledge differences may be influenced by cultural fluctuations that result in the uneven distribution of information about medicinal plants. In other words, they suggest that women have inherited more culinary and domestic skills, thus such results are easily understood. Additionally, Oliveira, Oliveira e Andrade (2010) propose that women show a strong interest in medicinal plants, likely due to spending more time at home and taking greater responsibility for family health care.

FIGURE 1-General profile and utilization of medicinal plants by UFPR interviewees.



Among the interviewees, the majority fell within the age group of 31 to 40 years old (51 individuals; 47.6%), reported using medicinal plants because they are considered natural products (47 individuals; 43.92%), and acquired their knowledge about these plants from family tradition (52 individuals; 48.60%). In a study conducted by Araújo et al. (2014) at a family health basic unit in Campina Grande - PB, this percentage was even higher (84% of respondents), with knowledge about the use of medicinal plants acquired from relatives. The high percentage of usage found in this study may be attributed to the ease of obtaining these plants and the effective alternative they offer for quality of life.

Additionally, the Western region of Paraná is privileged in terms of the number of species, as presented by Ruppelt et al. (2015). These authors listed and described 43 plant species used in this region based on previously conducted surveys.

Similarly, Viganó, Viganó, and Cruz-Silva (2007) and Paulert et al. (2014) also reported that the majority of their interviewees (36% and 74%, respectively) use medicinal plants because they are natural products. According to Diniz et al. (1997) the use of herbal remedies involves issues of citizenship because by using medicinal plants, the individual becomes an active agent in caring for their health, rather than just another patient reliant solely on professionals who prescribe allopathic medications. However, often due to the perception that medicinal plants are natural products, many people believe that they pose no harm to health, as recently observed by Araújo et al. (2014). Therefore, actions aimed at educating the population about the potential risks of indiscriminate use and self-medication are of paramount importance.

In the study, 16 different health problems treated with medicinal plants were reported by the participants (Figure 2). The group of female faculty members cited the highest number of health problems (11), followed by the group of male administrative staff, which mentioned nine health problems. Janitors and male faculty members mentioned eight problems each, and the maintenance staff mentioned six health problems. Influenza and the common cold were the most frequently mentioned by all groups and resulted in the highest percentages of therapeutic indications. Following them were migraine (which was only not mentioned by the male faculty group), insomnia, colic, and gastritis.

In this study, a greater preference for medicinal plants was observed in addressing respiratory issues such as colds and flu, which affect respondents across different groups, age ranges, and genders. Guaco (Mikania glomerata) was even introduced into the university gardens for addressing such problems. According to Castro et al. (2005), Mikania glomerata (guaco) is recognized for its bronchodilator and expectorant properties, making it suitable for treating coughs, asthma, bronchitis, hoarseness, and other symptoms associated with colds and flu.

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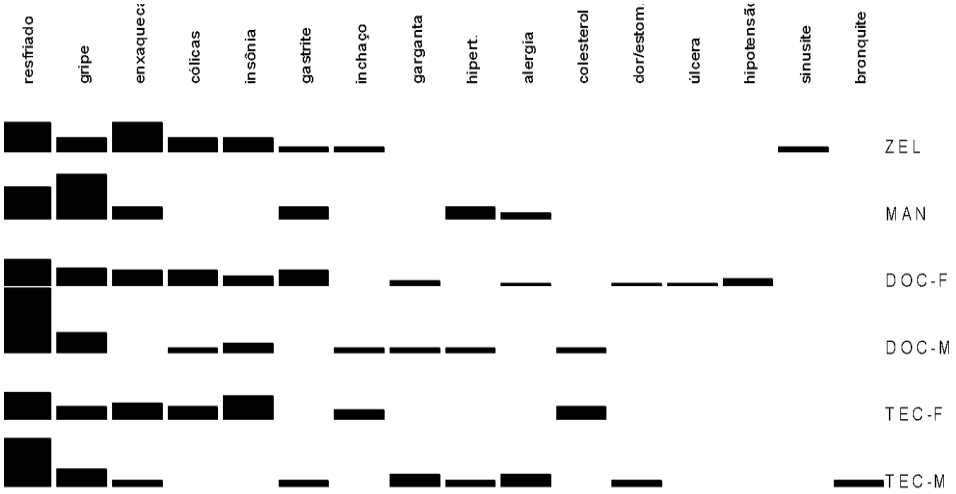
In a study similar to this one, conducted by Viganó, Viganó e Cruz-Silva (2007), medicinal plants were primarily recommended for respiratory and digestive system ailments, followed by circulatory system disorders.

FIGURE 2- Health problems reported by UFPR interviewees and treated with medicinal plants. The height of the vertical columns indicates the frequency of mentions within each group. JAN= janitors; MAN= third-party personnel responsible for maintenance of infrastructure and gardens; DOC= faculty members, M-male, F-female; TEC= administrative staff, M-male, F-female.



Another commonly cited health issue, which ranked among the most frequently indicated for therapeutic use, was colic, primarily mentioned by female interviewees, across all groups including faculty, administrative staff, and janitors. This problem is likely related to reproductive system issues (menstrual cramps).

Regarding the plants, 50 different species were cited for medicinal purposes, some of which are also commonly used in cooking as seasonings (e.g., garlic, onion, parsley), in salads or sautés (e.g., lettuce, endive, kale), and as spices (e.g., cinnamon, ginger). Among the mentioned plants, chamomile, lemon balm, boldo, mint, guaco, chamomile, fennel, mallow, stonebreaker, rosemary, and carqueja were listed by interviewees from all groups and are among the most commonly used plants by these interviewee categories (Table 1; Figure 3). Boldo, lemon balm, and mint, along with lemongrass, also appeared

among the most mentioned plants by interviewees in a survey conducted by Araújo et al. (2014) at a family health unit.

The use of chamomile may be associated with its digestive and sedative herbal properties; lemon balm is particularly employed for its pleasant flavor and calming effects; mint is especially utilized for respiratory issues (such as colds, nasal congestion) and digestive problems. Boldo is employed for liver ailments and digestive issues; and guaco, which has various household uses, has proven effects primarily on the respiratory system, acting as a bronchodilator, antitussive, and expectorant. Rosemary has internationally accepted indications, especially for home treatment of hypertension, digestive problems, loss of appetite, and externally for rheumatic symptoms; and chamomile is primarily used for digestive system issues, nervous and menstrual colics, and as a sedative (LORENZI; MATOS, 2008). The main uses of these plants, cited as the most common by the interviewees, partly coincide with the main diseases listed in the interviews, which were colds and flu, migraine, colic, and insomnia.

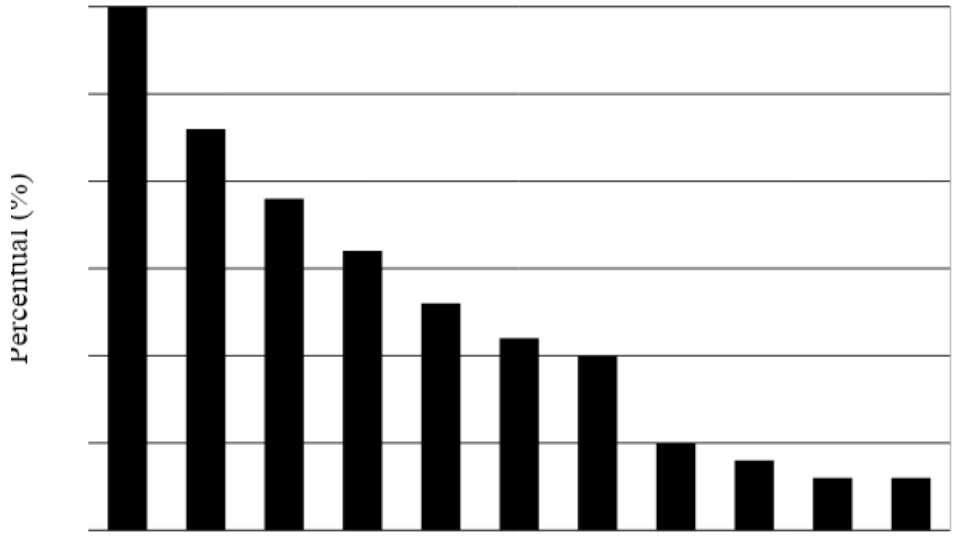
Table 1. Most frequently mentioned medicinal plants in the interviews conducted.

MEDICINAL PLANT	FAMILY	SPECIES
Rosemary	*Lamiaceae*	*Rosmarinus officinalis L.*
Boldo	*Lamiaceae*	*Plectranthus barbatus Andr.*
Chamomile	*Asteraceae*	*Chamomilla recutita (L.) Rauschert*
Carqueja	*Asteraceae*	*Baccharis crispa Spreng.*
Lemon Balm	*Poaceae*	*Cymbopogon citratus (DC.) Stapf*
Fennel	*Apiaceae*	*Pimpinella anisum L.*
Guaco	*Asteraceae*	*Mikania glomerata Spreng.*
Mint	*Lamiaceae*	*Mentha spp.*
Marigold	*Asteraceae*	*Achyrocline satureoides (Lam.) DC.*
Mallow	*Malvaceae*	*Malva sylvestris L.*
Stonebreaker	*Phyllanthaceae*	*Phyllanthus niruri L.*

In addition to medicinal use, questions were formulated to assess the use of medicinal plants as seasonings and spices in the daily lives of the interviewed individuals, as many of them are commonly attributed to these two purposes: health treatment and culinary uses. In total, 24 species were listed, among which chives, bay leaf, basil, oregano, and parsley were listed by all interviewed groups. It was observed

that ten of the species listed as condiments or seasonings were also included in the medicinal use list, highlighting their use for different purposes, namely: rosemary, holy basil, garlic, cinnamon, onion, ginger, mint, nutmeg, parsley, and sage.

FIGURE 3. Percentage of usage of the most frequently mentioned medicinal plants by UFPR interviewees.



Based on the data collected from the questionnaires and the analyses presented, various extension activities were conducted with the janitors of the university (third-party employees responsible for cleaning at UFPR). This group was chosen from among the interviewees because they are in contact with the medicinal plants in the university's garden and prepare daily teas for the other participants in the study. The activities conducted included lectures on topics related to cultivation methods of the species, harvesting, storage, differences between scientific and common names, main tea preparation methods, therapeutic indications, guidance, and key precautions. Additionally, practical activities were carried out involving visits to the Medicinal and Aromatic Plants Garden at UFPR Palotina Campus, to learn about the plants; group dynamics in the Botany Laboratory, to weigh fresh and dried medicinal plants and understand their different forms of consumption; and finally, to conclude, a recipe contest was held using some species of medicinal plants. This playful activity aimed to provide

a moment of relaxation and, at the same time, an exchange of knowledge among the janitors, professors, and student extensionists.

According to the participants' reports, the activities allowed for clarifying doubts and acquiring new knowledge. This also ensured that the preparation of teas offered to other university staff was conducted more safely, preventing, for instance, the mistaken use of plants such as citronella (Cymbopogon winterianus), which morphologically resemble lemongrass (Cymbopogon citratus), in tea preparation. Through these initiatives, the received information will undoubtedly be shared within their families and, consequently, throughout the community.

In addition to knowledge sharing, the activities also facilitated a closer relationship between the university and the community, fostering integration among participants. This contributed to the academic and civic development of undergraduate students, extending beyond the confines of traditional classrooms and lectures.

CONCLUSIONS

From this study, it can be concluded that medicinal plants continue to occupy a prominent position in our society. The Western region of Paraná stands out for its abundance of species, as evidenced by the list of plants mentioned in the interviews and the high percentages of daily use reported by the participants. Consumption is driven by the ease of access to these plants and their lower cost compared to manufactured medications. However, it is important to emphasize that they should not be used as a replacement for prescribed medications without medical supervision.

Additionally, it is worth emphasizing that the use of medicinal plants should be undertaken with caution, as many of the known and utilized plants have not undergone comprehensive studies and research to unveil their contraindications and potential side effects.

Through this study, it was found that most respondents use plants because they view them as natural products, often overlooking the potential serious health risks associated with improper use.

This survey enabled the analysis of various factors regarding the use of medicinal plants within the academic setting of UFPR and facilitated the implementation of targeted

extension activities for one of the interviewed groups, resulting in knowledge exchange, updating, and acquisition of new insights.

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