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CULTIVATING KNOWLEDGE, REAPING TRANSFORMATIONS: THE EXPERIENCE OF PRODUCING MEDICINAL PLANTS BASED ON ECOLOGICAL PRINCIPLES AND PHYTOTHERAPEUTIC PRODUCTS AT THE MARINGÁ INDUSTRIAL PENAL COLONY, PARANÁ, BRAZIL

CULTIVANDO SABERES, COLHENDO TRANSFORMAÇÕES: A EXPERIÊNCIA DA PRODUÇÃO DE PLANTAS MEDICINAIS EM BASE ECOLÓGICA E FITOTERÁPICOS NA COLÔNIA PENAL INDUSTRIAL DE MARINGÁ, PARANÁ, BRASIL

CULTIVANDO SABERES, COSECHANDO TRANSFORMACIONES: LA EXPERIENCIA DE LA PRODUCCIÓN DE PLANTAS MEDICINALES EN BASE ECOLÓGICA Y DE FITOTERÁPICOS EN LA COLONIA PENAL INDUSTRIAL DE MARINGÁ, PARANÁ, BRASIL

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ABSTRACT

Currently, Brazil has the third largest prison population in the world, behind only the United States and China. In this context, it is essential to discuss proposals that can contribute to mitigating this type of reality. Thus, the research aimed to evaluate the behavior of inmates involved in the production, processing and use of medicinal plants and herbal medicines. The research is being carried out at the Industrial Penal Colony (CPIM), located in the municipality of Maringá, Paraná, from April 2023 to March 2024. It was divided into two Stages: Stage 1: The inmates will be involved in activities related to the implementation unit for the production and maintenance of medicinal plant species (germplasm bank); Stage 2: Processing of medicinal plants and production of herbal medicines. In addition to production and processing, the strategy is to implement a pilot pharmacy specializing in herbal/homeopathic medicines to meet the demands of the Penal Colony. The inmates involved in the production, processing and production of herbal medicines will be evaluated from a psychotherapeutic point of view, a constructivist approach, at the beginning and at the end of the research. The following assessments will be carried out: 1. Performance of the behavior of inmates involved in the different activities of Stages 1 and 2; 2. Application of a semi-structured questionnaire for individual social interviews, at the beginning and end of the research; 3. Carrying out a final workshop and producing experience reports. For the end of this article, the inmates' involvement in the activities of Stages 1 and 2 were evaluated. Considering the foundations of psychopedagogy and the constructivist approaches of Vygotsky and Piaget, gains were perceived by the inmates throughout their involvement in activities related to herbal medicine. Gains include learning, empathy, motivation, interest, bond formation, interdependence and respect, both individually and in groups. These results are in line with the constructivist theories of these two authors, which emphasize the importance of social interaction, active participation and the gradual development of cognitive and social skills.

Keywords: Agroecology. Prisons. Employment and Income. Resocialization.

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RESUMO
Atualmente, o Brasil tem a terceira maior população carcerária do mundo, atrás apenas dos Estados Unidos e da China. Nesse contexto, é fundamental discutir propostas que possam contribuir para mitigação desse tipo de realidade. Assim, a pesquisa teve por objetivo avaliar o comportamento de apenados envolvidos com a produção, processamento e uso de plantas medicinais e de fitoterápicos. A pesquisa está sendo realizada na Colônia Penal Industrial (CPIM), localizada no município de Maringá, Paraná, no período de abril de 2023 a março de 2024. Foi dividida em duas Etapas: Etapa 1: Os apenados estarão envolvidos em atividades relacionadas à implantação de unidade para produção e manutenção de espécies de plantas medicinais (banco de germoplasma); Etapa 2: Processamento de plantas medicinais e produção de fitoterápicos. Além da produção e processamento, a estratégia é implantar uma farmácia piloto especializada em fitoterápicos/homeopáticos para atender demandas da Colônia Penal. Os apenados envolvidos no processo de produção, processamento e produção de fitoterápicos serão avaliados sob o ponto de vista psicoterápico, abordagem construtivista, no início e ao final da pesquisa. As seguintes avaliações serão realizadas: 1. Desempenho do comportamento dos apenados envolvidos nas diferentes atividades das Etapas 1 e 2; 2. Aplicação de questionário semiestruturado para entrevista social individual, no início e ao final da pesquisa; 3. Realização de oficina/workshop final e produção de relatos de experiências. Para fins deste artigo, foram avaliados os envolvimentos dos apenados nas atividades das Etapas 1 e 2. Considerando os fundamentos da psicopedagogia e as abordagens construtivistas de Vygotsky e Piaget, foram percebidos ganhos pelos apenados ao longo do envolvimento nas atividades relacionadas à fitoterapia. Os ganhos incluem aprendizagem, empatia, motivação, interesse, formação de vínculos, interdependência e respeito, tanto em termos individuais quanto grupais. Esses resultados estão alinhados com as teorias construtivistas desses dois autores, que enfatizam a importância da interação social, da participação ativa e do desenvolvimento gradual das habilidades cognitivas e sociais.

Palavras-chave: Agroecologia. Presídios. Emprego e Renda. Ressocialização.

RESUMEN
Actualmente, Brasil tiene la tercera mayor población carcelaria del mundo, detrás solo de Estados Unidos y China. En este contexto, es fundamental discutir propuestas que puedan contribuir a mitigar esta realidad. Así, la investigación tuvo como objetivo evaluar el comportamiento de los reclusos involucrados en la producción, el procesamiento y el uso de plantas medicinales y de fitoterápicos. La investigación se está llevando a cabo en la Colonia Penal Industrial (CPIM), ubicada en el municipio de Maringá, Paraná, entre abril de 2023 y marzo de 2024, y fue dividida en dos etapas: la Etapa 1, en la cual los reclusos participan en actividades relacionadas con la implantación de una unidad para la producción y el mantenimiento de especies de plantas medicinales (banco de germoplasma), y la Etapa 2, correspondiente al procesamiento de plantas medicinales y a la producción de fitoterápicos. Además de la producción y el procesamiento, la estrategia incluye la implantación de una farmacia piloto especializada en fitoterápicos/homeopáticos para atender las demandas de la Colonia Penal. Los reclusos involucrados en el proceso de producción, procesamiento y elaboración de fitoterápicos serán evaluados desde el punto de vista psicoterapéutico, con un enfoque constructivista, al inicio y al final de la investigación, mediante: 1) evaluación del desempeño del comportamiento de los reclusos en las actividades de ambas etapas; 2) aplicación de un cuestionario semiestructurado para entrevista social individual, al inicio y al final del estudio; y 3) realización de un taller final y elaboración de relatos de experiencias. Para los fines de este artículo, se evaluó la participación de los reclusos en las actividades de ambas etapas. Considerando los fundamentos de la psicopedagogía y los enfoques constructivistas de Vygotsky y Piaget, se observaron avances entre los reclusos a lo largo de su participación en las actividades relacionadas con la fitoterapia, incluyendo aprendizaje,

empatía, motivación, interés, formación de vínculos, interdependencia y respeto, tanto a nivel individual como grupal. Estos resultados están alineados con las teorías constructivistas de ambos autores, que destacan la importancia de la interacción social, la participación activa y el desarrollo gradual de habilidades cognitivas y sociales.

Palabras clave: Agroecología. Prisiones. Empleo e Ingresos. Resocialización.

1 INTRODUCTION

Currently, Brazil has the third largest prison population in the world, behind only the United States and China. The CNJ data point to the increase in the Brazilian prison population, which, according to Depen's diagnosis, grows at a rate of 8.3% per year. In this march, the number of prisoners could reach almost 1.5 million in 2025, equivalent to the population of cities such as Belém and Goiânia.

The research to be carried out in the Industrial Penal Colony of Maringá is based on the need to solve problems related to education, rehabilitation and professional training of the prison population of the Industrial Penal Colony of Maringá and, in parallel, to contribute to the improvement of health and reduction of social inequality of the population of the Odwaldo Bueno Netto neighborhood in Maringá. For this, the production, processing and use of medicinal plants and herbal medicines, produced by inmates of the Penal Colony, will be strategically used.

The Project is part of the UBUNTU Program, proposed by the Graduate Program in Agroecology, Professional Master's Degree (PROFAGROEC), in partnership with the Center for Agroecology and Sustainable Development (NADS) of the State University of Maringá (UEM). In addition to the medicinal plant production unit, the project will implement the processing unit and a pilot pharmacy specializing in herbal medicines and homeopathic herbal medicines to meet the internal demands of the Penal Colony.

With the name "UBUNTU", which means "I am because you are", it is intended to form a Germplasm Bank, that is, to form a structure that stores the genetic material of various species of medicinal plants, adding knowledge about the repairing effect on the health of the individual, placing a natural and healthy alternative to the use of allopathic medicines due to the great absence of side effects in this alternative and sustainable process.

Therefore, the project's general objective is: To verify the feasibility of building and preparing people in a state of seclusion to generate work, add values with the production of medicinal plants cultivated in an ecological way for use in the form of teas and herbal preparation, recovering both the person and their physical health. And the specific objectives: a) To create a Germplasm bank of medicinal plant species in the Penal Colony of Maringá; b) To promote the rehabilitation of inmates; and c) qualification for professional activity after rehabilitation.

Medicinal plants contain a wide range of bioactive compounds, such as alkaloids, flavonoids, terpenes and polyphenols, which have relevant pharmacological activities (Silva,

2012). These compounds can act at different cellular levels, influencing biological processes such as inflammation, cellular control, and immune response (Gupta et al., 2015). In addition, many medicinal plants have been investigated for their antioxidant and antimicrobial properties, which are beneficial for their therapeutic utility (Santos et al., 2018).

Despite the vast knowledge accumulated throughout history about the medicinal properties of plants, there are important challenges in the safe and effective incorporation of these treatments into modern medical practice. The lack of standardization in dosage, the natural variability of the compounds present in plants, and the interaction with other drugs are factors that require rigorous investigations (Ferreira, 2019).

The objective of this research was to evaluate the behavior of inmates involved with the production, processing and use of medicinal plants and herbal medicines. The research was carried out at the Industrial Penal Colony (CPIM), located in the municipality of Maringá, Paraná, from April 2023 to March 2024. It was divided into two Stages: Stage 1: The inmates were involved in activities related to the implementation of a unit for the production and maintenance of medicinal plant species (germplasm bank); Step 2: Processing of medicinal plants and production of herbal medicines. In addition to production and processing, the strategy is to implement a pilot pharmacy specializing in herbal medicines/homeopathics to meet the demands of the Penal Colony.

2 LITERATURE REVIEW

2.1 AGROECOLOGY AND SOCIOECONOMIC ISSUES IN BRAZIL

Agroecology is an agricultural approach that integrates principles and practices of ecology into food production, primarily targeting sustainable, natural, ecological, and socially just systems. It seeks to promote biodiversity, the efficient use of natural resources, the resilience of agricultural ecosystems and the well-being of communities linked to the agricultural environment (Gliessman, 2000)

Organic agriculture is a production model characterized by not using synthetic fertilizers, pesticides, modified seeds, animal growth regulators and intense mechanization of activities, aiming to reduce environmental impacts, in addition to growing healthier food products.

The model of a family system of organic production certainly fits into the concept of the science of "Agroecology" generating a healthy diet and a quality of life with a disease

prevention approach within a highly social and environmental focus, (HAMERSCHMIDT, 2000)

The pressure exerted by consumers, increasingly demanding a clean, toxic-free and nutritionally superior product is another factor that has motivated farmers to bet on this production system

Although it represents less than 1% of the global market, the growth forecast for the Brazilian organic food market for this year is 30%, according to projections by the initiative. In Brazil, there are 11,478 organic producers registered in the country, almost all of which are family producers (MAPA, 2022).

The organic system is an agricultural production methodology that does not require the use of chemical inputs and is characterized by a process that takes into account the relationship between soil, plant and environment (MEIRELLES & RUPP, 2014). According to Dias et al. (2015), "agriculture and the consumption of organic products have been expanding in recent years and experts in the sector are predicting growth of 9% or more in developed countries". Also according to Dias et al. (2015), as cited by the United Nations Conference on Trade and Development (UNCTAD, 2013), "there are currently about two million organic farmers, around 80% in developing countries, in addition to the trade in organic products selling 60 billion dollars annually". However, although growing, the arable area destined to organic production in Brazil is estimated at only 0.25% (BUAINAIN & BATALHA, 2007).

Agroecosystems is the fundamental unit of studies in which mineral cycles, energy transformations, biological processes and socioeconomic relations are seen and analyzed together, as stated by Altieri (1980 apud Caporal, 2009).

According to PAULUS (1999),

> "The concept of agroecosystem proposed by SCHLINDWEIN & DAGOSTINI (1998) incorporates in its definition spatial-temporal (related to structure), functional and conjunctural aspects which, in some way, are also organizational. In other words, it is a concept that is not limited to considering only the elements of the physical environment, in their biotic and abiotic components, and their interrelationships, but that recognizes aspects of a socioeconomic and cultural order, as elements that are located in the genesis of the different agroecosystems (SCHLINDWEIN & DAGOSTINI, 1998: p.8).

Currently, the development of technologies for the production of medicinal plants is a work that is being done in universities and research institutions, and that is already bringing results that can be readily used by producers. The use of organic cultivation techniques for

production is not accidental. There is research that proves that chemical fertilization alters the content of active ingredients in some species. The use of pesticides not only alters the quality of these principles, but also leaves toxic residues on the plants, which can lead to poisoning of the user. Therefore, pesticides are not allowed in the production process.

The adoption of the organic production system requires a change of mentality and attitude from the producer. It is not enough just to replace chemical inputs with fertilizers and organic products. It is necessary to understand living processes and use all your capacity for observation and relating facts, to make the most of the full potential of natural cycles.

When it comes to medicinal plants, it is very important to consider the content and quality of the active ingredients, which are the products that are of commercial interest. For their preservation, their ecological characteristics must be respected, that is, they must seek to reproduce conditions similar to those found in their places of natural occurrence, for this reason that agriculture is thought of on an ecological basis and especially the care of the soil.

2.2 THE REALITY OF THE BRAZILIAN PRISON SYSTEM

The classification of convicts in the state of Paraná, as well as in many other prison systems, is based on several criteria. Generally, convicts are classified according to the type of crime committed, the length of time to be served, behavior in prison, and other factors. It is important to note that classification policies and specific categories may vary over time and according to state and national legislation. Therefore, it is essential to check the current regulations and procedures of the prison system in the state of Paraná to obtain accurate information.

The classification can usually include:

- Sentence fulfillment regime: Convicts can be classified into different regimes, such as closed regime, semi-open regime and open regime, based on the severity of the crime and the time of sentence to be served.
- Behavior in prison: The behavior of the convict in prison can influence his classification. Those who demonstrate good behavior can obtain benefits, such as regime progression or reduction of sentence.
- Type of crime: Convicts can be classified based on the type of crime they have committed, such as violent crimes, non-violent crimes, crimes against property, among others.

- Special needs: The classification can also be considered as medical, psychological or drug treatment needs of the inmates.
- Dangerousness: The assessment of the dangerousness of the convict can also influence their classification and the need for additional security measures.
- Criminal history: The criminal history of the convict, including previous convictions, can also be taken into account in the classification.
- It is important to emphasize that the classification of convicts must be carried out fairly and in accordance with current legislation, guaranteeing the human rights and dignity of inmates. The prison system should provide opportunities for rehabilitation and rehabilitation whenever possible.

For more detailed information on the classification of convicts in the state of Paraná, consult the Penitentiary Department of Paraná (DEPEN) or the current prison legislation of the state.

The State of Paraná has a prison system model where inmates who arrive receive, in addition to the above classifications, some perks, among the perks are the option to continue their studies.

The tests for the National Exam for the Certification of Youth and Adult Skills for Persons Deprived of Liberty or under socio-educational measure that includes deprivation of liberty (Encceja PPL) 2023 are scheduled for October 17 and 18. This exam, carried out by the National Institute of Educational Studies and Research Anísio Teixeira (Inep), has the function of assessing competencies, skills and knowledge of young people and adults at the level of completion of Elementary School or High School for the purpose of correcting the school flow.

In the state of Paraná, Encceja PPL 2023 had the registration of 10,108 people deprived of liberty (PPL), which represents an increase of 21% compared to the 2022 edition, when the State had 8.4 thousand PPLs registered. Interestingly, this percentage of increase in registrations reached almost the same rate as last year, when there was an increase of 22% compared to 2021.

According to the director of the Criminal Police of Paraná, "For us, this increase in the number of inmates enrolled in Encceja PPL is of great importance because it demonstrates that the PPPR has sought and encouraged people deprived of liberty to study. We have many cases of people who had no schooling when they entered the penitentiary system and through the literacy offered within the units, many managed to complete elementary and high

school and reached higher education. The greater the incentive, the greater the search for qualification", he highlights.

Among the nine administrative regions of the Criminal Police of Paraná (PPPR), the regional of Londrina was the one with the most registrations, with 3,234 PPLs registered, followed by the regional of Curitiba with 2,281 registered; regional office of Umuarama with 1,034 enrolled; regional office of Ponta Grossa with 862 enrolled; regional of Maringá with 784 enrolled; regional of Guarapuava with 661 enrolled; regional office of Foz do Iguaçu with 596 enrolled; regional of Cascavel with 491 registered and regional of Francisco Beltrão with 364 registered.

Paraná is among the states with the highest number of prisoners involved in educational activities, according to the ranking of the National Penitentiary Department. The state has almost 9.5 thousand prisoners enrolled in elementary and secondary, professional and higher education and also in other pedagogical projects. The number, which represents 32% of the total number of inmates in the prison system, places Paraná in fourth place in the ranking, behind Santa Catarina, Maranhão and Pernambuco.

According to Julio Prestes, (2023) Encceja PPL is an initiative that aims to provide education and certification opportunities for individuals who are serving time in the prison system. This approach recognizes the importance of education in social reintegration, in reducing criminal recidivism, and in valuing human dignity. Education is a fundamental tool for the reintegration of inmates into society. Encceja also offers the opportunity to acquire certificates of completion of primary and secondary education, which can increase the chance of employability and improve the prospect of life after prison", explains the head of the Education and Training Division of the PPPR.

With this dedication and enjoying this perk, the convict manages to reduce his sentence. For every 12 hours of study, the right to a reduction of 1 day of sentence is granted. In the case of Encceja, this classification is made according to the grade. If he passes the exam, the convict receives 200 hours of remission and, if he does not reach the grade, he receives 8 hours of remission.

For the participant to be enrolled and apply for Elementary School certification, it is necessary to be at least 15 years old on the day of the tests and not have completed Elementary School. For the participant to apply for High School certification, it is necessary to be at least 18 years old on the day of the tests and not have completed High School. To

apply for certification, the participant must achieve at least 100 points in the objective tests and 5 points in the essay.

2.3 HEALTH OF PERSONS DEPRIVED OF LIBERTY IN BRAZIL

Education is a right of every Brazilian citizen, and it is a duty of the State to offer it regardless of the social, national, cultural, gender or ethnic-racial condition of the individual (Vieira, 2020). In the case of people deprived of liberty, this right, as well as other structural deficiencies found in the Prison System, was not a priority for the Brazilian State (Oliveira, 2017; Quaresma, Dos Santos Rocha & Cruz, 2021).

Article 205 of the Federal Constitution (CF) of 1988 says: "Education, a right of all and a duty of the State and the Family, will be promoted and encouraged with the collaboration of society, aiming at the full development of the person, his preparation for the exercise of citizenship and his qualification for work".

2.4 THE PRODUCTION OF MEDICINAL PLANTS AND PHYTOTHERAPY AS STRATEGIES FOR REHABILITATION IN THE BRAZILIAN PRISON SYSTEM

And the speeches in education and resocialization are essential for life in society, these two words have always gone together. Penitentiaries emerged as a way of punishing the practice of crimes and preventing the practice of new crimes. In Brazil, after the entry into force of Law No. 7,210 of 1984, the law that governs Penal Execution, the penalty began to have, in addition to the purpose of punishment and prevention, mainly the resocialization of the convicted and to provide him with a return to society, whether working or cultivating something.

The use of medicinal plants is an ancient and widespread practice in several cultures around the world. The use of different parts of plants to treat a variety of diseases and health conditions has been widely documented in the scientific and ethnobotanical literature. In this theoretical framework, we will address some relevant aspects about medicinal plants, their historical importance and therapeutic potential.

Since ancient times, plants have been employed as natural sources of treatment and cure of diseases. According to Smith et al. (2007), ancient civilizations, such as the Egyptians, Greeks, and Chinese, already had vast knowledge about the medicinal properties of specific plants. Historical records indicate that traditional medicine in many cultures largely incorporated the use of plants for symptom relief and disease treatment.

Medicinal plants contain a wide range of bioactive compounds, such as alkaloids, flavonoids, terpenes and polyphenols, which have relevant pharmacological activities (Silva, 2012). These compounds can act at different cellular levels, influencing biological processes such as inflammation, cellular control, and immune response (Gupta et al., 2015). In addition, many medicinal plants have been investigated for their antioxidant and antimicrobial properties, which are beneficial for their therapeutic utility (Santos et al., 2018).

Despite the vast knowledge accumulated throughout history about the medicinal properties of plants, there are important challenges in the safe and effective incorporation of these treatments into modern medical practice. The lack of standardization in dosage, the natural variability of the compounds present in plants, and the interaction with other drugs are factors that require rigorous investigations (Ferreira, 2019).

As Ferreira, 2009 cites above, plants have been playing their fundamental role throughout history, that is, when applied and used correctly.

3 MATERIAL AND METHOD

The research was carried out at the Industrial Penal Colony of Maringá (CPIM), located at Estrada Velha para Paiçandu, 2812, Gleba Ribeirão Colombo, municipality of Maringá, Paraná. This work was part of the UBUNTU Program, proposed by the Center for Agroecology and Sustainable Development (NADS) and the Technological Vocational Center in Agroecology and Organic Production (CVT) and the Graduate Program in Agroecology, Professional Master's Degree (PROFAGROEC) of the State University of Maringá (UEM). It has a partnership with DEPEN/CPIM, the Municipality of Maringá (PMM), the Public Ministry of Labor (MPTPR), Federal Justice/PR, State Justice, Milton Santos School (EMS MST). The word UBUNTU, of African origin, means "I am because you are". It involved five (5) inmates aged between 45 and 69 years, all with good behavior and who participate, in parallel, in the activity of olericulture. The five inmates have low education, two of whom only read and write only their names and the rest attended up to the fourth year of elementary school.

The present work is characterized in its methodology, a bibliographic review of the production of medicinal plants on an ecological basis and of herbal medicines in the behavior of inmates of the industrial Penal Colony of Maringá.

According to Galliano, 1979):

> The word science comes from the Latin scientia, which means to learn or to know to know. In knowing, however, this etymological explanation does not help to differentiate scientific knowledge from other types of knowledge [religious, philosophical, family, etc.]. It is necessary to make it clear that science is a special knowledge about reality. cia is a special knowledge about reality For Galliano (1979, p. 16), science "is the rational, systematic, exact and verifiable knowledge of reality"

A case study was carried out in the Industrial Penal Colony of Maringá, Paraná (PEM). And an area for the production of medicinal plant species was installed, which will serve as a base for the production of medicines and the implementation of a community pharmacy specialized in the prescription of herbal medicines to meet the internal demands of the Penal Colony. Agroecological techniques will be used for the production of medicinal plants, which will allow, a posteriori, the certification of the production unit as organic. Figure 1 shows the Penal Colony of Maringá on the map of Maringá.

Figure 1

Map of the Region surrounding the PEM with location

Source: Google Maps, 2024.

The research was developed in two stages. In the first stage, theoretical classes were held on planting on an ecological basis, harvesting and extraction of active ingredients from medicinal plants. In addition, lectures and debates were held on the use of medicinal plants and the importance of contact with nature for mental health. In the second stage, the identification and selection of medicinal plants for cultivation, formation and conduction of the Germplasm Bank was carried out and the participants developed activities related to soil preparation, fertilization, planting, conduction and harvesting of the species and participation in the unconscious evaluation through the clipping of a magazine and pasting on cardboard and at the end self-explanation.

In questionnaire 1 it is to understand what was the knowledge about medicinal plants, to know if they understand the importance of studying these plants, to understand if they are willing to want to learn and finally to know the knowledge acquired in the course.

In the second questionnaire it was to evaluate, the first two questions to know if you learned and if you were motivated by the course, these two answers were individual; in the next two questions it was about contact with the community.

The species were acquired from the Technological Center (CTC) of the Agricultural and Industrial Cooperative of Mandaguari (COCARI), municipality of Mandaguari, Paraná, from the Experimental Farm of Iguatemi (FEI/UEM), belonging to the State University of Maringá (UEM) and from other sources of donation. In the second stage, the inmates were involved in the processing activities of species of the Germplasm Bank and in the extraction and production of herbal medicines. The Production area (germplasm bank) corresponds to 600m2 and is composed of the species presented below, with their main characteristics. All Figures have been taken from Google 2024.

Lemon Balm (Melissa officinalis L): popularly known as true lemon balm, it is a plant belonging to the Lamiaceae family, which originates in Asia and Europe (Figure 3). It has a very characteristic lemon odor, being widely used in the control of various nervous crises, anxiety, hysteria, and emotions through its tranquilizing and sleep-inducing activity (DA SILVA et al., 2021).

Figure 2

Lemon Balm

Pau d'Álho (Gallesia integrifólia Spreng. Harms): also popularly known as ibirarema, it belongs to the Phytolaccaceae family (Figure 4). It is arboreal in size and is native to South America, occurring in Brazil in the Atlantic Forest, Amazon, Cerrado and Caatinga biomes (MARCHIORETTO, 2019).

Figure 3

Garlic stick

Boldo (Plectranthus neochilus, Schltr.): is a plant that presents physiological and morphological differences when grown in varied environmental conditions such as light intensity, altitude, humidity. Variations range from the expression of reproduction, sexual or not, to the number of leaves per branch, the distance between nodes, the leaf area and the external morphology of the leaves. Such variations are useful to explain the concept of phenotypic plasticity (LIMA et al., 2017)

Figure 4

Bilberry

Boldo-do-chile (Peumus boldus): also known as boldo normal, nacional, it is a medicinal plant originally from the region of Chile, but which is widely used in the Brazilian territory. With a more pleasant aroma than conventional boldo and a not so bitter taste, boldo-do-chile is great for solving issues related to the digestive tract. In addition to therapeutic and spiritual purposes, boldo-do-chile can also be added to any recipe, as a seasoning.

Figure 5

Boldo of Chile

Merthiolate (Jatropha Multifida): also known as mercury, pine nut, white spinning top, Paraguayan pine nut, purple pine nut, purgative herb, jalapa, castor bean, purple peon, tiu root. It is used as an antiseptic and antifungal and had gallic acid in its latex, acting on the inhibition of inflammation similar to the commercial drug. The leaves and fruits can also be used as healing, anti-hemorrhagic, laxative, antirheumatic and antihypertensive.

Figure 6

Merthiolate

Alfavaca (Ocimum gratissimum L): known as alfavacão, alfavaca-cravo, alfavaca, manjericão-cheiroso, alfavaca-de-vaqueiro, remédio-de-vaqueiro, etc. Originally from the East and subspontaneous throughout Brazil. It is a shrubby plant (it reaches up to 2 m in height), very aromatic and with a smell similar to "cloves". Alfavaca tea can eliminate toxins and fight inflammatory processes, due to the high concentration of flavonoids. In the presence of cold and flu symptoms, cough and sore throat, alfavaca tea is an excellent expectorant of the upper airways, helping to eliminate mucus and secretions.

Figure 7

Basil

Comfrey (Symphytum officinale L.): it is a perennial plant of European and Asian origin that has been introduced to the United States and South America. Used in the treatment of burns and wounds, diarrhea, bronchitis; in gargles in throat inflammations.

Figure 8

Comfrey

Swamp cane (Costus spicatus Jacq): popularly known as monkey cane, it is a medicinal plant rich in flavonoids, heterosides, tannins and oxalic acid, with anti-inflammatory, diuretic, nephroprotective and tonic properties, and is therefore indicated to assist in the treatment of kidney stones, urinary infection or menstrual changes, for example.

Figure 9

Caninha do brejo

Aloe vera (Aloe vera): Grows wild in tropical climates around the world and is cultivated for agricultural and medicinal uses. It is a plant used for various medicinal purposes for many years. It is usually used for skin-related problems (acne, burns, psoriasis, leprosy, etc.). It is known for its effects on wound healing, burns, hemorrhoids, bruises, rheumatic pains and as a laxative and in the treatment of cancer.

Figure 10

Aloe vera

Penicillin (Alternanthera brasiliana L.) popularly called evergreen, caaponga, carrapichinho, carrapichinho-do-mato, perpetual-do-brasil, perpétua-do-mato, quebra-panela, cabeça-branca, aconite-do-mato, ervanço, nateira, terramycin, infallible, doril, penicillin (penicillin-vegetal), has its origin from Central America. The infusion of its leaves is considered diuretic, digestive, depurative, and is used for liver and bladder diseases. The population of the Amazon region uses the infusion of the flowers against diarrhea, inflammation and cough (becica), while the decoction of the leaves is used internally in case of stroke. The bath prepared with the leaves is used for "bone displacement".

Figure 11

Penicillin

Mint (Mentha piperita): commonly called mint. It is a mild-tasting plant, widely used to make spices, candies and other treats. It has a strong and spicy flavor, it is usually used to flavor toothpaste, candies, gum, etc. Menthol has the ability to stimulate the so-called "cold nerves", which are usually activated by the drop in temperature (cold). But in this case, the nerves are activated by the presence of the substance in our body. Its regular consumption can help in treating symptoms such as pain, bloating, gas, etc. It has action against flu and colds. Menthol is a great decongestant and expectorant, helping to reduce sore throats and dry coughs.

Figure 12

Mentha

Ora-pro-nóbis (Pereskia aculeata): it is an edible plant with several medicinal properties, providing several health benefits, such as preventing anemia, improving bowel function, weight loss, preventing premature aging, and lowering cholesterol. It is rich in fiber, protein, iron, vitamin A and vitamin B3, which are nutrients with antioxidant, lipid-lowering, laxative and hypoglycemic properties.

Figure 13

Ora-pro-nobis

The research carried out is characterized as qualitative, exploratory research and, in procedural terms, as action research (TRIPP, 2005).

After all the work was carried out, some forms of evaluations were carried out: 1. Systematization of the experiences of the inmates involved in the process of implementation and processing of medicinal plant species; 2. Application of semi-structured questionnaires for individual social interviews. The questionnaire consisted of questions about previous knowledge of planting, cultural treatments, harvesting and extraction of active ingredients from medicinal plants. The questionnaire was applied at the beginning and at the end of the research; 3. Workshop, with the following progressive activities: 1. Non-specific warm-up; 2. Specific heating; 3. Main activity; 4. Participants' statements; 5. Observation, description and analysis of activities. A more detailed description of the Workshop is presented below: 1. Title: Cultivating Hope: Implementation of a Medicinal Plant Germplasm Bank for Herbal Use; 2. Objective: to rescue the experiences accumulated by the inmates in the process of implanting, conducting, harvesting and processing the species of medicinal plants and relate them to the promotion of physical and mental health, with the learning of practical skills and with the development of therapeutic skills; 3. Materials used: mat, cardboard, scissors, ruler, magazines and glue; 4. Development of activities: 4.1. Introduction (15 minutes); 4.2. Selection of medicinal plants by the participants (15 minutes); 4.3. Group Discussion (30 minutes); 4.4. Poster Creation (30 minutes); 4.5. Presentation of the Posters (15 minutes); 4.6. Participants' testimonies (15 minutes).

In the process of forming the planting of medicinal plants, rock dust was used to fertilize the space used for the idealization of the germplasm bank, the rocking process is an old

method, but still very little explored that is based on the use of rock with specific characteristics due to the presence of nutrients that after being ground becomes a kind of powder. When incorporated into the soil, it promotes a slow release of minerals such as phosphorus and potassium. Through this technique, we sought to equip inmates with a practice that has great potential for sustainability, as it allows the use of mining waste, reduces environmental problems caused by the indiscriminate use of chemical fertilizers, produces better quality food and reduces agribusiness costs (SILVEIRA, 2016 apud JUNIOR, 2020).

In this process of practical and scientific learning, according to Alovisi et al. (2020), basalt powder can be considered as an alternative source of low-cost fertilizer and soil amendment, however, the low solubility of basalt powder indicates that this material cannot be used as the main source of nutrients for plants.

Soil fertility, among other factors, depends directly on the quality of the mother rock, which when ground by physical processes, can be sources of mineral nutrients for the soil.

4 RESULTS AND DISCUSSION

This article analyzes the psychopedagogical impact of practical activities related to the management of medicinal plants in agroecological projects. The results demonstrate that the practical activities contribute significantly to raise the participants' self-esteem and strengthen the sense of accomplishment, corroborating the conclusion presented in the original text.

The monitoring and observation of the inmates involved in the activities of implantation, conduction, processing of medicinal plants and production of herbal medicines allowed the identification of objective characteristics through Questionnaires (Questionnaires 1 and 2) and subjective through the cutting of magazines and pasting on posters (holding a workshop), both in individual and group terms, data shown in figure 14 and subjective data in figure 15.

4.1 PSYCHOPEDAGOGICAL EVALUATION OF CONVICTS

Psychopedagogical evaluation of the participants involved in activities related to soil preparation, planting and conducting medicinal plant species (germplasm bank) and processing and production of herbal medicines

Impact on Self-Esteem and Sense of Accomplishment: because the research work is practical and with a productive bias, it was perceived, throughout the process, that the theoretical-practical activities developed positively influenced the participants' self-esteem and sense of accomplishment.

Hands-on Learning and Application of Knowledge: The activities carried out served as a tangible form of knowledge application, offering a hands-on approach to learning about botany, herbal medicine, and plant care. The knowledge shared was quickly socialized and assimilated by the participants.

Development of Social and Teamwork Skills: the practical activities created a favorable environment for teamwork. Teamwork allowed the development of social, collaborative, and communication skills among participants, essential for positive and productive interactions.

Conflict Resolution and Emotion Management: the collaborative environment contributed to the resolution of conflicts and the management of emotions of the participants, which can be observed by the reduction of negative or confrontational behaviors.

In the graphic data, the convicts worked and evaluated are named as, convict 1: L69; convict 2: R59; convict 3: D51; convict 4: M46 and C45: their characteristics are analyzed and discussed below.

Some parameters were analyzed and placed as a form of individual and collective evaluation, considering that freedom of expression was a point of fundamental importance for them to be able to write or even in the workshop of unconscious projection.

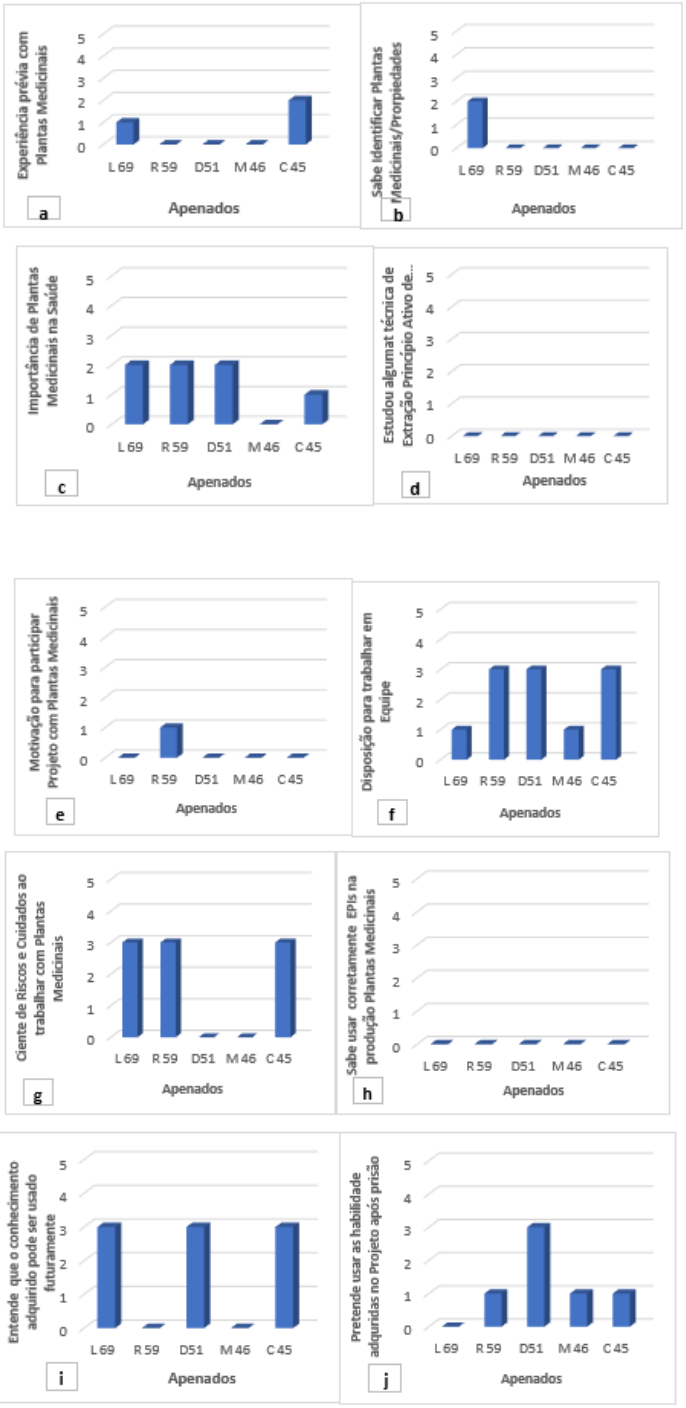
Table 1

Tables of basic characteristics of the convicts

Participant	Age	Schooling	Profession	CHARACTERISTIC
L69	69	FUNDAMENTAL	PORTHOLE	CALM
R59	59	FUNDAMENTAL	MUSICIAN	GOOD PERSON
D51	51	FUNDAMENTAL	ARMBAND	QUIET/SHY
M46	46	FUNDAMENTAL	ARMBAND	DEAF MUTE
C45	45	FUNDAMENTAL	ARMBAND	STRONG/SHY

Figure 14

Characteristics evaluated in the Initial Questionnaire (Questionnaire applied to the inmates participating in the CPIM Research. Maringá. Paraná. Letter: first letter of the participant's name; Number: age of the participant



The Source of Self-Esteem: Essays, Speeches and Reflections" is an impactful work by renowned writer Toni Morrison, released by Companhia das Letras in 2020. In this volume, Morrison presents us with a series of essays, speeches, and reflections that delve deep into the intricate and multifaceted concept of self-esteem. Through an insightful approach, the author explores themes such as identity, race, gender, and power, revealing how these complex elements shape people's self-image and self-worth.

With her eloquent prose and unique sensitivity, Morrison invites readers on a journey of self-knowledge and reflection on self-esteem. Challenging pre-established concepts, she highlights the importance of recognizing and valuing the diversity of experiences and life trajectories. "The Source of Self-Esteem" not only offers an enriching and provocative read, but also serves as a powerful instrument of empowerment, inspiring readers to embrace their uniqueness and find strength in self-esteem.

Impact on Self-Esteem and Sense of Accomplishment: because the research work is practical and with a productive bias, it was perceived, throughout the process, that the theoretical-practical activities developed positively influenced the participants' self-esteem and sense of accomplishment.

Hands-on Learning and Application of Knowledge: The activities carried out served as a tangible form of knowledge application, offering a hands-on approach to learning about botany, herbal medicine, and plant care. The knowledge shared was quickly socialized and assimilated by the participants.

Development of Social and Teamwork Skills: the practical activities created a favorable environment for teamwork. Teamwork allowed the development of social, collaborative, and communication skills among participants, essential for positive and productive interactions.

Conflict Resolution and Emotion Management: the collaborative environment contributed to the resolution of conflicts and the management of emotions of the participants, which can be observed by the reduction of negative or confrontational behaviors.

According to MORRISON (2020), from a therapeutic point of view, contact with nature and the process of growing medicinal plants can have positive effects on the mental health of participants, helping to reduce stress, anxiety, and symptoms of depression. Additionally, using plants for the preparation of natural remedies can encourage self-care practices and promote a more holistic approach to health.

Machado Junior, Romeus de Paula (2023 p.10) Although education is not the only instrument to obtain a decent standard of living, it provides the individual with greater chances of access to better working conditions and coexistence.

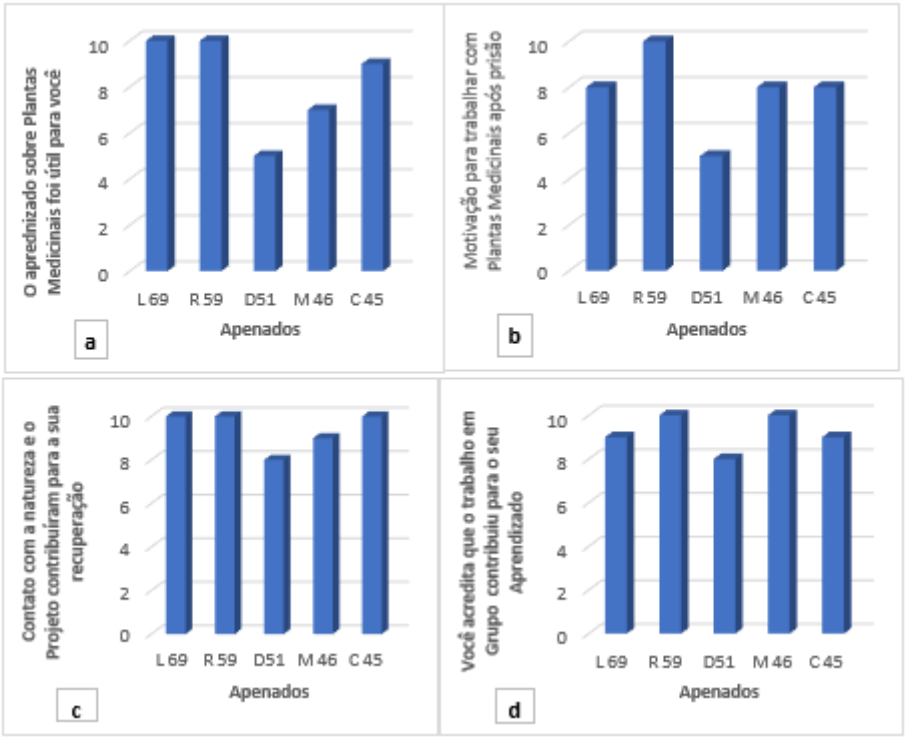
Connection with Nature and Well-Being: the positive impact of interaction with medicinal plants on the psychological well-being of the participants was observed, a fact that points to the importance of involvement and interaction with nature as a determining factor in the production of health and well-being, especially for positively influencing the emotional and mental state of individuals.

The feelings of an incarcerated individual or in Total Institutions, as defined by GOFFMAN (1987), can vary greatly, but generally include anxiety, stress, loneliness, anger, and even depression. Studies show that deprivation of liberty can negatively impact mental health, leading to feelings of isolation and hopelessness (Benelli, 2014). Lack of social contact and limited autonomy also contribute to these feelings. The results of the research point to the potential for reducing these impacts on the physical and mental health of inmates of the Industrial Penal Colony of Maringá.

Using projective techniques, which are psychological methods used to understand unconscious aspects of a person's personality, it was separated letter, name and age in which individuals were named as: L69, R59, D51, M46 and C45. A questionnaire was applied at the beginning of the project, and at the end a questionnaire of 4 questions and to conclude the perceptual work, a poster pasting work was carried out with the aim of verifying unconscious data so that they could be confronted and analyzed with the questionnaires of each individual. The work on cardboard serves to form data that presents vague or ambiguous stimuli to observe the individual's responses and reveal their hidden thoughts, feelings and impulses.

Figure 15

Characteristics evaluated in the Final Questionnaire (Questionnaire 2) applied to the inmates participating in the CPIM Survey. Maringá. Paraná. Letter: first letter of the participant's name; Number: age of the participant



Soon after, we will make the relationship between the conscious (questionnaire) and the unconscious (cut and paste), starting from figure 16 to perceive the relationship between the result of the answers and the poster built where the unconscious projection of the individual's perception is confirmed in relation to the work developed of herbal medicines in the Penal Colony during the process of implantation of the germplasm bank.

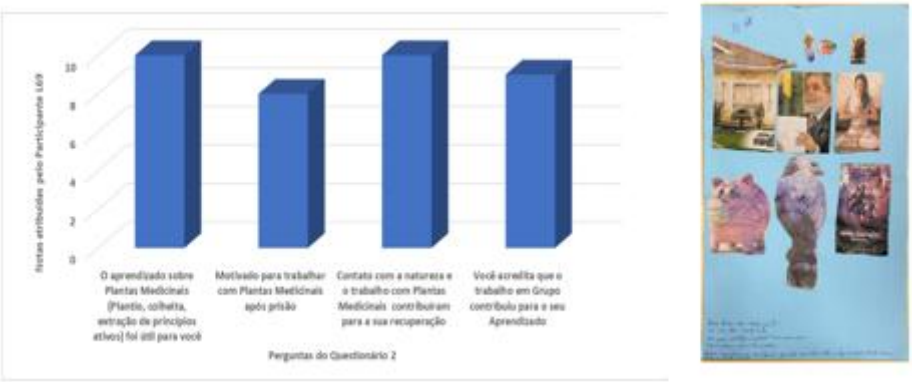
4.2 SUBJECTIVE EVALUATION OF THE CONVICTS

L69 In the first figure pasted on the poster he recalled that he has a house and how he values it at this moment, then he says that he pasted the president's photo because he is his unconditional fan and that it represents his ideals, soon after he presents the woman in a yoga position and comments that it is necessary to meditate and calm down to face life, the figure of the little pig for him represents the planning and saving that everyone should do this, then the harpy eagle recalled that when he was little his father had eliminated a bird of this

size that was almost 2 meters long and was not used and that today he is aware of preservation, finally the last figure represents freedom, as reported in Figure 16.

Figure 16

Conscious (Questionnaire 2) and unconscious (Workshop) responses of Participant L 69, obtained in the final evaluation of the research

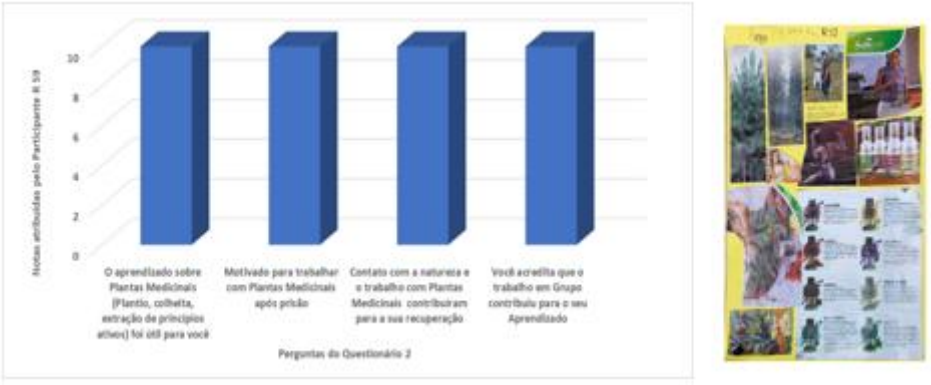


However, I can help create a generic abstract based on the title and theme of the article: The article "Benefits of Herbal Medicine in the Prison Context: A Systematic Review" seeks to analyze the potential benefits of using herbal medicine in prison settings through a systematic review of the literature. It examines relevant studies investigating inmates' use of medicinal plants and the positive impacts on physical and mental health. The article addresses possible therapeutic benefits of medicinal plants in reducing stress, anxiety, and other common health problems in prison populations. In addition, it discusses issues related to the safety, efficacy and implementation of phytotherapy programs in prison institutions.

R59 She reported that the nature placed on her collage poster represents connection and that everything is connected and some know how to use the knowledge of plants and others do not, so she chose figures that represent nature, the first two, third teaching and connection, three figures with women making use of this knowledge and the rest of the figures the final objective is the preparation of herbal medicines to assist in health treatments. As shown in Figure 17.

Figure 17

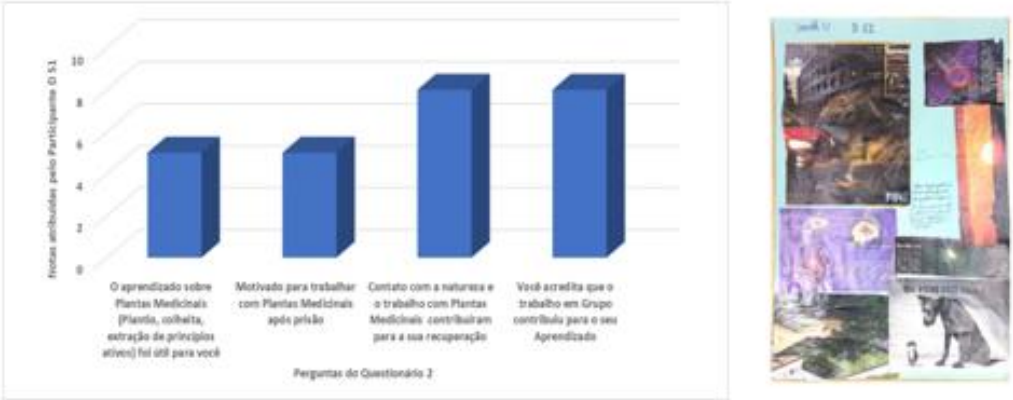
Conscious (Questionnaire 2) and unconscious (Workshop) responses of Participant R 59, obtained in the final evaluation of the research



D51 He is the least communicative of individuals, but he is afraid to impose himself and take his place, so he pasted the first drawing containing a giant iguana, his friend r59 inspires him with music so the second figure of a keyboard and a brain, the third figure for him reminds him of integration, the contrasting figure of the sunset and total darkness represents this fickle thought, Finishing with the figure of the small dog and the big dog that he often feels like the small dog in the photo. As depicted in Figure 18.

Figure 18

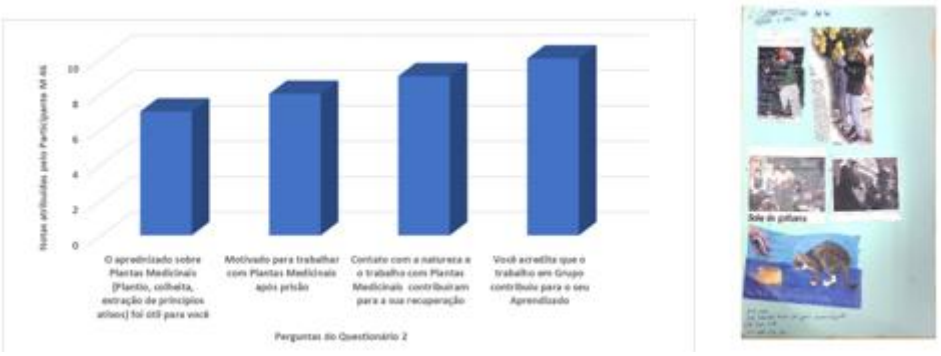
Conscious (Questionnaire 2) and unconscious (Workshop) responses of Participant D 51, obtained in the final evaluation of the research



M46 And the apparently more limited individual, he does not hear or speak, he knows how to read but cannot write, he preferred to put what he misses the most, which is the sound, the figure of the cat by analogy represented their mascot that he found familiar, only the photo of the grape harvest he related to the vegetable garden. Figure 19.

Figure 19

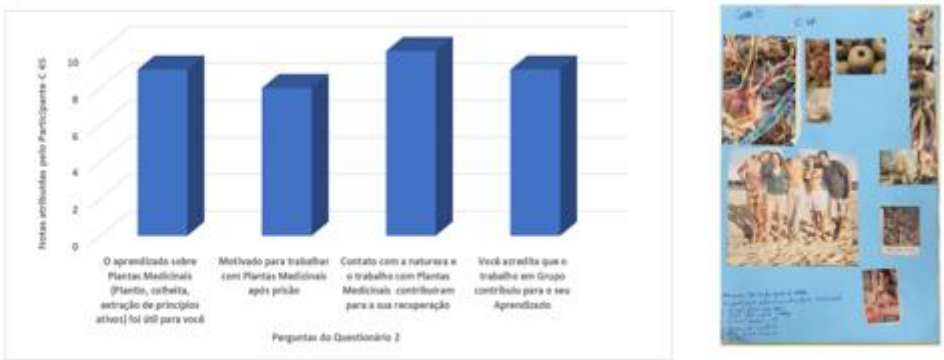
Conscious (Questionnaire 2) and unconscious (Workshop) responses of Participant M 46, obtained in the final evaluation of the research



C45 This individual has cataracts and a lot of difficulty seeing, soon he will have the operation to restore or improve his vision, in the first picture he reported that he knows that plants and cultivation are good for neurons, the photos of strawberries, apples and coffee represent their work in this place, he likes children so 4 photos of children. Figure 20.

Figure 20

Conscious (Questionnaire 2) and unconscious (Workshop) responses of Participant C 45, obtained in the final evaluation of the research



5 CONCLUSIONS

The preliminary results of the research point to the potential of phytotherapy in the production of physical and mental (psychological) health of inmates, justified by the important and growing gains in terms of learning, empathy, motivation, interest, formation of bonds, interdependence and respect throughout the involvement in the processes of the activities carried out. The gains observed could be perceived in terms of the individual and group as they could be observed in a high degree of satisfaction, all closer to 10 on the scale of the corresponding axis of each inmate.

This work in the Penal and Industrial Colony of Maringá proved to be an activity of great importance for the recovery and resocialization of the incarcerated. In addition to providing new skills and possibilities for life projects, the contact with nature and the activities related to the cultivation of medicinal plants provided a therapeutic environment and contributed to the improvement of the mental health of the participants. Therefore, we believe that the continuity of the project is essential for the promotion of the recovery and rehabilitation of the inmates.

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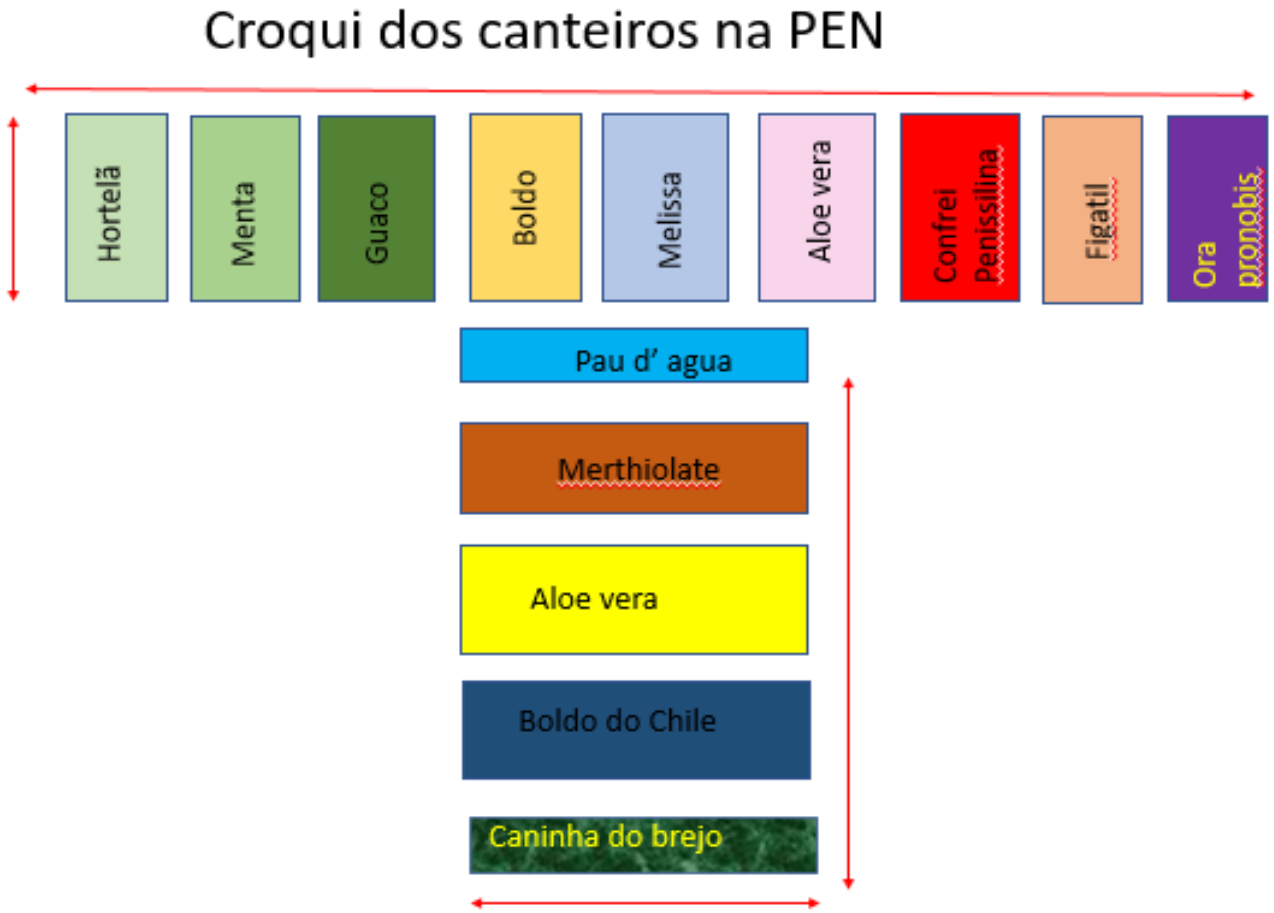
Pronto! Todas as referências estão agora no padrão APA 7ª edição, organizadas em ordem alfabética pelo sobrenome do primeiro autor ou pelo título (quando não há autor identificado).

APPENDIX

Figure 21



QUESTIONNAIRES

Questionnaire 1. Questionnaire to evaluate the inmates of an agricultural penal colony who will be submitted to learning how to plant, harvest and extract active ingredients related to phytotherapeutic knowledge. Initial Phase.

1. What is your previous experience with planting and harvesting plants?
2. Do you know how to identify different types of plants and their medicinal properties?
3. Do you understand the importance of using medicinal plants in human health?
4. Have you ever studied any technique for extracting active ingredients from plants?
5. What is your motivation for participating in this phytotherapy course?
6. Are you willing to work as a team during the process of planting, harvesting and extracting active ingredients?

7. Are you aware of the risks and precautions required when dealing with medicinal plants?
8. Do you know how to properly use personal protective equipment (PPE) while working on the plantation?
9. Do you understand that the knowledge acquired in this course can be applied in the future in your life outside prison?
10. How do you intend to use the skills acquired in this course after serving your sentence?

Questionnaire 2. Questionnaire to evaluate the inmates of an agricultural penal colony who will be submitted to learning how to plant, harvest and extract active ingredients related to phytotherapeutic knowledge. Final Phase.

Inform grade from o to 10 and justify the answer.

1. Do you consider that learning about planting, harvesting and extracting active ingredients was useful to you?
2. Did you feel motivated to continue working with plants after serving your sentence?
3. Do you consider that the contact with nature and the activities related to the cultivation of plants contributed to your recovery?
4. You believe that group work contributed to your learning