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METHODS USED FOR THE GROWING AND REFORESTATION OF Vanillosmopsis arborea BAKER AN ENDEMIC SPECIES OF ARARIPE PLATE

MÉTODOS UTILIZADOS PARA O CULTIVO E REFLORESTAMENTO DE *Vanillosmopsis arborea* BAKER UMA ESPÉCIE ENDÊMICA DA CHAPADA DO ARARIPE

MÉTODOS UTILIZADOS PARA EL CULTIVO Y REFORESTACIÓN DE Vanillosmopsis arborea BAKER UNA ESPECIE ENDÉMICA DE LA CHAPADA DO ARARIPE

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ABSTRACT
The species *Vanillosmopsis arborea* BAKER (Asteraceae), popularly known as candeeiro, represents one of the seven native Brazilian species of the genus Vanillosmopsis. Ceará, Pernambuco and Piauí (SANTOS et al., 2009). It presents economic potential due to its bioactive properties and expressiveness of the amount of (-) - α-bisabolol in its oil. The risk of extinction and the diversification of predatory actions on species of economic potential, as in the case of the species under study, justifies the search for research on the cultivation and sustainable management of the species. The objective of this research was to carry out a literature review of the methods used for the cultivation and reforestation of *Vanillosmopsis arborea* BAKER. The study was carried out by means of a systematic literature review of works published in Portuguese, therefore, 05 works were used, for the search it was used mainly the databases "Web of Science", "Science direct", "Pubmed", "Scielo" and Google Scholar, with results updated from 2002 to 2018. The following keywords were used, alone and in combinations: *Vanillosmopsis arborea,* Cultivation, propagation. CAVALCANTI's research (2002) aimed to repopulate four areas of clearings in Chapada do Araripe; 330 seedlings were produced by cuttings. The seedlings proved to be resistant, with an average growth between 5.99-7.18 cm, slow, but uniform, and the definitive establishment was at the mercy of the climatic conditions of the region. Leaving the possibility of future research on the method used, in the following year CAVALCANTI tested the sexual propagation of *Vanillosmopsis arborea* Baker, after a period of 30 days, the beginning of germination was observed. It was verified for the seeds that fell naturally in the bag, a vigorous, uniform and high index process, since it reached 89%. The result was attributed to the most appropriate method of collecting the seeds, the form of storage, as well as the climatic conditions. Based on (TAIZ E ZEIGER, 2009) MATIAS (2012), concluded that the lamp is a species that does not germinate immediately when placed under ideal conditions, thus the need for further studies to break dormancy. This research shows the need for future studies on methods of propagation of *Vanillosmopis arborea* due to the small number of agronomic studies, in addition, the researches already carried out have not obtained any satisfactory results, so this work makes clear the need for continuity to the new ones. studies of plant propagation processes with the species with a view to the nativity and the risk of extinction of the species.

KEYWORDS: Propagation. *Vanillosmopsis arborea* Baker. Cariri plants.

RESUMO
A espécie *Vanillosmopsis arborea* BAKER (Asteraceae), popularmente conhecida como candeeiro, representa uma das sete espécies nativas do Brasil do gênero *Vanillosmopsis*, A espécie em estudo é endêmica da biorregião do Araripe, localizada no sertão do Nordeste brasileiro, na interseção dos estados do Ceará, Pernambuco e Piauí (SANTOS *et al.*, 2009). Apresenta potencial econômico devido às suas propriedades bioativas e expressividade da quantidade de (-)-α-bisabolol no seu óleo. O risco de extinção e a diversificação das ações predatórias sobre espécies de potencial econômico, como é o caso da espécie em estudo, justifica a busca por pesquisas sobre o cultivo e manejo sustentável da espécie. O objetivo desta pesquisa foi realizar uma revisão de literatura dos métodos utilizados para o cultivo e reflorestamento de *Vanillosmopsis arborea* BAKER. O estudo foi realizado por meio de revisão

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sistemática de Literatura de trabalhos publicados em língua portuguesa, sendo assim, foram utilizados 05 trabalhos, para a busca foi utilizada principalmente as bases de dados "Web of Science", "Science direct", "Pubmed", "Scielo" e Google Acadêmico, com os resultados atualizados de 2002 a 2018. As seguintes palavras-chave foram utilizadas, sozinhas e em combinações: *Vanillosmopsis arborea*, Cultivo, propagação. A pesquisa de CAVALCANTI (2002), teve como finalidade repovoar quatro áreas de clareiras na Chapada do Araripe, 330 mudas foram produzidas por estaquia. As mudas mostraram-se resistentes, com crescimento médio entre 5,99-7,18 cm, lento, porém uniforme, estando o estabelecimento definitivo à mercê das condições climáticas da região. Deixando a possibilidade de pesquisas futuras quanto ao método utilizado, no ano seguinte, o CAVALCANTI testou a propagação sexuada de *Vanillosmopsis arborea* Baker**,** após um período de 30 dias observou-se o início da germinação. Verificou-se para as sementes que caíram naturalmente dentro do saco, um processo vigoroso, uniforme e de alto índice, uma vez que atingiu 89%. O resultado foi atribuído ao método mais adequado de coleta das sementes, à forma de armazenamento, bem como às condições climáticas. Baseado em (TAIZ E ZEIGER, 2009) MATIAS (2012), concluiu que o candeeiro é uma espécie que não germina imediatamente quando colocado sob condições ideais, sendo assim a necessidade de novos estudos para a quebra da dormência. Esta pesquisa mostra a necessidade de estudos futuros acerca de métodos de propagação de *Vanillosmopis arborea* devido ao pequeno número de estudos agronômicos, além disso, as pesquisas já realizadas não obtiveram nenhum resultado foi satisfatório, sendo assim este trabalho deixa claro a necessidade da continuidade aos novos estudos dos processos de propagação de plantas com a espécie tendo em vista a natividade e o risco de extinção da espécie.

PALAVRAS-CHAVE: Propagação. *Vanillosmopsis arborea* Baker. Plantas do Cariri.

RESUMEN
La especie *Vanillosmopsis arborea* BAKER (Asteraceae), conocida popularmente como candeeiro, representa una de las siete especies nativas de Brasil del género Vanillosmopsis, la especie en estudio es endémica de la biorregión de Araripe ubicada en el interior del Noreste de Brasil, en la intersección de los estados de Ceará, Pernambuco y Piauí (SANTOS et al., 2009). Tiene potencial económico debido a sus propiedades bioactivas y a una cantidad significativa de (-)-α-bisabolol en su aceite. El riesgo de extinción y la diversificación de acciones depredadoras sobre especies con potencial económico, como la especie en estudio, justifican la búsqueda de investigaciones sobre el cultivo y manejo sustentable de la especie. El objetivo de esta investigación fue realizar una revisión bibliográfica sobre los métodos utilizados para el cultivo y reforestación de *Vanillosmopsis arborea* BAKER. El estudio se realizó a través de una revisión sistemática de la literatura de trabajos publicados en lengua portuguesa, por lo tanto, se utilizaron 05 trabajos, para la búsqueda se utilizaron principalmente las bases de datos "Web of Science", "Science direct", "Pubmed". Scielo" y Google Scholar, con resultados actualizados de 2002 a 2018. Se utilizaron las siguientes palabras clave, solas y combinadas: *Vanillosmopsis arborea*, Cultivo, propagación. La investigación de CAVALCANTI (2002) tuvo como objetivo repoblar cuatro áreas de claros en Chapada do Araripe, se produjeron 330 plántulas por esquejes. Las plántulas demostraron ser resistentes, con un crecimiento promedio entre 5,99-7,18 cm, lento pero uniforme, quedando el establecimiento definitivo a merced de las condiciones climáticas de la región. Dejando la posibilidad de futuras investigaciones sobre el método utilizado, al año siguiente CAVALCANTI probó la propagación sexual de *Vanillosmopsis arborea* Baker, luego de un período de 30 días se observó el inicio de la germinación. Para las semillas que cayeron naturalmente a la bolsa se observó un proceso vigoroso, uniforme y de alta velocidad, alcanzando un 89%. El resultado se atribuyó al método más adecuado de recolección de las semillas, la forma de almacenamiento y las condiciones climáticas. Con base en (TAIZ E ZEIGER, 2009) MATIAS (2012), concluyó que la lámpara es una especie que no germina inmediatamente cuando se coloca en condiciones ideales, por lo que requiere de mayores estudios para romper la dormancia. Esta investigación muestra la necesidad de futuros estudios sobre los métodos de propagación de *Vanillosmopis arborea* debido al pequeño número de estudios agronómicos, además, las investigaciones ya realizadas no obtuvieron resultados satisfactorios, por lo que este trabajo deja claro la necesidad de continuar con nuevos estudios de los procesos de propagación de plantas con las especies teniendo en cuenta la natividad y el riesgo de extinción de la especie.

PALABRAS CLAVE: Propagación. *Vanillosmopsis arbórea* panadero. Plantas de curry.

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INTRODUCTION

Vanillosmopsis arborea Baker popularly known as lamp, is a small tree, up to 4m high, native to Chapada do Araripe, in the state of Ceará, has great value for the scientific community due to several factors. The essential oil in its stem has a high content of (-) - α-bisabolol, an unsaturated monocyclic sesquiterpene that makes its wood capable of producing flame, justifying the popular name “lamp” (Leite, 2013).

(-) - α-bisabolol, is present in dermatological products, in addition to its antimicrobial, antifungal and anti-inflammatory activities, it also shows its low toxicity (Matos *et al.,* 1998; Leite *et al.,* 2013). It is believed that this component is one of the responsible for the actions carried out by the essential oil of lamp, in addition, it has an economic value for being a very important chemical constituent. And therefore, this vegetable is highlighted in the region where it is endemic.

In Brazil, Chapada do Araripe stands out in the Northeast of Brazil for its richness in native species that attracts an intense anthropic activity that results in a risk of extinction for various forms of life found there. One of the plants that suffer the consequences of these actions is the “lamp” (*Vanillosmopis arborea* Baker), with many populations of this plant being decimated due to the indiscriminate use of its wood.

In recent years, this vegetable has aroused the interest of scientific research in the Cariri region for presenting economic value and expressiveness and content of (-) - α-bisabolol major component that is used in dermatological products, in addition, it has some biological activities: Anti-inflammatory, antimicrobial, antifungal.

This market for essential oils is prosperous for countries that have a vast biodiversity, such as Brazil, and that have conditions to add value to their raw materials, that is, transforming them into processed products.

The extraction is usually done by steam dragging with a Clevenger type hydrodistillation device. In the case of the lamp, the leaves can be used, but the stem has a higher concentration, later stored and made Chemical identification. The extraction of this oil has aimed at advances in Scientific research, both for its content and also for presenting the biological activities mentioned above.

GOALS

MAIN GOAL

Conduct a literature review of the methods used for the cultivation and reforestation of *Vanillosmopsis arborea* BAKER.

SPECIFIC OBJECTIVES

- Check, based on the literature, the chemical composition.
- Check, based on the literature, biological activities.

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METHOD

RECOMMENDATIONS FOR BOTANICAL MATERIAL COLLECTION

The collection should be made from the parts of the plant, in the morning or afternoon and never on a cloudy or rainy day, as it may compromise the efficiency of the collection, considering that in the case of this research, if the soil is very humid, it will be difficult to climb the trees. small mountains of the Chapada thus hampering the collection process. For each part of the plant, it is important to obey the following rule for collection and take into account the place where the collection of botanical material will be carried out:

• Be legalized with environmental protection agencies.
• Make the withdrawal only of the material that will be used in the research.
• Collect on dry and sunny days.
• Avoid removing all sheets.
• Carry personal materials such as: Notepads, binoculars, among others.
• As for food needs, it is important to bring water bottles, some snacks due to the time you will spend in the forest.
• It is also advisable to go well protected, appropriate clothing, hat, closed shoes, long-sleeved shirt and glove.
• Material to collect, machete or brush cutter, bags to store the stem.
• Finally make the identification of the plant
• After identification of the plant, the stem will be collected.

LITERATURE REVIEW

The study was carried out by means of a systematic literature review of works published in Portuguese, therefore, 05 works were used, for the search the databases "Web of Science", "Science direct", "Pubmed" were used, "Scielo" and Google Scholar, with the results updated from 2002 to 2018. The following keywords were used, alone and in combinations: *Vanillosmopsis arborea*, Cultivation, propagation.

RESULTS AND DISCUSSION

MAJORITY COMPONENT

According to Cardoso (2006), sesquiterpenes are hydrocarbons of chemical formula C15H24, formed by three isoprene units, which can be cyclic or branched. These compounds are found in many plants and insects as defense agents or pheromones. They are usually found in essential oils or as in the form of their oxygenated derivatives.

The sesquiterpernos can be identified through the chromatography process, be it of any type. According to Brochini (1998), in the case of sesquiterpenes, CG-EM analyzes have been shown to be

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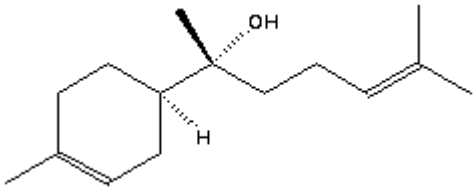
efficient since such substances easily rearrange to form fragments with equal m / z, which gives rise to spectra that differ only in relation to the relative intensities of the spikes.

(-) - α-bisabolol

One of the main constituents found in the chemical identification of lamp oil is (-) - α-bisabolol, a sesquiterpene that is widely used by the pharmaceutical and cosmetic industries, due to its proven anti-inflammatory power (MARCO, 2015).

Figure 01: Chemical structure of (-) - α-bisabolol



Source: Lima, (2006)

From the essential oil of its wood is extracted a potent anti-inflammatory, healing and mild antiseptic known as (-) - α-bisabolol, a very important sesquiterpernos indicated for hygiene and care products for babies and children, for delicate skin creams, suntan lotions, sunscreens, after-sun lotions, aftershave, post-waxing, toothpaste, mouthwash and lip balms (MAPRIC, 2011).

EUGENOL

Eugenol, which is present in several essential oils, has aroused the interest of scientists due to its liposolubility, low toxicity and because it has biological activities (Linard, 2008).

Some researches prove biological actions of eugenol found as a major component in clove essential oil, but research has not yet been done analyzing whether in *Vanillosmopsis arborea* Baker oil this constituent presents these activities, it is believed that the main responsible for the activities is its major constituent (-) - α-bisabolol.

FOUND ON THE SPREAD

CALVOCANTI's research (2002) aimed to repopulate four areas of clearings in Chapada do Araripe, 330 seedlings were produced by cuttings. The seedlings proved to be resistant, with an average growth between 5.99-7.18 cm, slow, but uniform, and the definitive establishment was at the mercy of the climatic conditions of the region.

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CONCLUSION

This research shows the need for future studies on methods of propagation of *Vanillosmopis arborea* due to the small number of agronomic studies, in addition, the researches already carried out have not obtained any satisfactory results, so this work makes clear the need for continuity to the new ones. studies of plant propagation processes with the species in view of the nativity and the risk of extinction of the species.

This work opens doors to combine scientific knowledge, since through the review the scientific importance of this research is highlighted. The technical impact is of great relevance mainly to increase the sources of research as methodologies to be applied in this line. Once research of this size, it provides greater competitiveness among research groups, which further increases scientific and technological production and, as a consequence, the generation of patents that consolidate centers of excellence in the region.

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