ISSN 2316-9281

Scientific Electronic Archives

Issue ID: Vol.19 (3), May/Jun 2026, p. 1-5
DOI: http://dx.doi.org/10.36560/19320262194
+ Corresponding author*:* raimundoluizbio@gmail.com

Efficacy of natural medicines in combating vaginal candidiasis: A review of the use of herbal remedies in women's intimate health

Eloisa Maria Pereira Neves [1], Daiany Alves Ribeiro [2], Dárcio Luiz de Sousa Júnior [1], Marina Micaelle Rodrigues Siqueira [1], Paulo Henrique Carvalho Silveira [3], Júlio César Silva [4], Antonio Júdson Targino Machado [4], Amanda de Andrade Marques [1], Jefferson David Melo de Matos [1], Maysa de Oliveira Barbosa [1], Raimundo Luiz Silva Pereira [1] +

[1] Maurício de Nassau University Center
[2] Federal University of Cariri
[3] CECAPE College
[4] Regional University of Cariri

Abstract. Vaginal candidiasis is a common recurrent infection primarily caused by *Candida albicans*, leading to significant discomfort and affecting the quality of life of women of reproductive age. Due to the increasing resistance to synthetic antifungal agents and the undesirable adverse effects associated with their use, interest in natural therapeutic alternatives has grown substantially. This study aimed to identify, through an integrative literature review, the main phytotherapeutic agents evaluated for the treatment of vaginal candidiasis. The search was conducted in the SciELO, BVS, and Google Scholar databases during the second semester of 2025, using the descriptors "Vaginal Candidiasis," "Phytotherapy," "Herbal Medicines," and "Phytotherapy for Candidiasis Treatment," combined with the boolean operators AND and OR. Inclusion criteria comprised articles published between 2015 and 2025, written in Portuguese, addressing natural products against *Candida albicans* with methodological clarity; duplicated articles, publications in other languages, and those not aligned with the study objective were excluded. A total of 20 articles were identified, 14 were preselected, and 7 m*et al*l eligibility criteria. The phytotherapeutics with the strongest antifungal evidence were Rosemary (*Rosmarinus officinalis*), Brazilian Peppertree (*Schinus terebinthifolia*), Propolis Extract**,** Curcuma longa**,** Garlic (*Allium sativum*), Oregano (*Origanum vulgare*), Barbatimão (*Stryphnodendron adstringens*), Tea Tree Oil, and Copaiba Oil (*Copaifera langsdorffii*). Most studies demonstrated significant biofilm reduction, inhibition of fungal growth, interference with ergosterol synthesis, and good tolerability. In conclusion, phytotherapeutic agents represent promising alternatives with considerable therapeutic potential and may be used alone or as adjuvant therapy in the management of vaginal candidiasis.
Keywords: *Candida albicans*; Vaginal candidiasis; Phytotherapy; Medicinal plants.

Introduction

Vulvovaginal candidiasis is an infection caused by the fungus *Candida albicans*, which typically colonizes the genital region, leading to pruritus, discharge, and inflammation. This microorganism is part of the natural human microbiota and, under normal conditions, does not cause harm. However, when physiological imbalance occurs, its population may proliferate excessively, becoming detrimental to health. This condition is more frequent in women, as the fungus is commonly present in the vaginal microbiota (Viana *et al*., 2019).

The genus *Candida* comprises approximately 200 species of yeasts that colonize various microenvironments of the human body, including the oropharynx, oral cavity, skin folds, secretions of the lower respiratory tract, vagina, urine, and feces (Furtado, 2018). Among these species, *Candida albicans* is the primary etiological agent responsible for this infection (Mardani *et al*., 2020). Among vulvovaginitis cases, vaginal candidiasis is the

second most prevalent, accounting for 17% to 39% of cases. It is estimated that approximately 75% of women of reproductive age will experience at least one episode of candidiasis during their lifetime (Firmiano *et al*., 2020).

Candidiasis may develop due to predisposing factors such as pregnancy, diabetes mellitus, use of antibiotics or oral contraceptives, tight or synthetic clothing, intimate hygiene products that may alter vaginal pH, vaginal douching, and climatic factors (Lages, 2000). Vulvovaginal candidiasis can significantly compromise women's quality of life, affecting both physical and mental health. When recurrent, it may trigger manifestations such as anxiety, depression, and low self-esteem, in addition to negatively impacting marital and sexual relationships (Araújo *et al*., 2020).

According to *Goodman & Gilman's* The Pharmacological Basis of Therapeutics (Brunton, Chabner, & Knollmann, 2012), updated therapeutic approaches for the treatment of candidiasis include topical administration of butoconazole, miconazole, clotrimazole, tioconazole, nystatin, and terconazole, as well as oral administration of fluconazole. However, increasing resistance of *Candida* yeasts to synthetic antifungal agents has been reported (Abílio *et al*., 2014).

Antifungal drugs are associated with adverse reactions and the development of microbial resistance, contributing to high recurrence rates of infection (Abílio *et al*., 2014). In this context, phytotherapy has been successfully applied in the pharmacological field and has emerged as a promising alternative, as adverse reactions related to medicinal plants and herbal products are generally lower compared to those associated with synthetic antifungals (Paiva *et al*., 2009; Cavalcanti, Almeida, & Padilha, 2011).

In response to increasing antifungal resistance, there has been a growing need to investigate new substances capable of eliminating these fungi (Castro, 2010). Several medicinal plants have demonstrated antifungal activity, including *Rosmarinus officinalis* L. (rosemary) (Castro *et al*., 2006; Cleff*et al*., 2012; Ribeiro *et al*., 2014), *Origanum vulgare* L. (oregano) (Abrantes *et al*., 2013; Lorenzi & Matos, 2008; Cleff, 2008), *Schinus terebinthifolius* Raddi (Brazilian peppertree) (Lorenzi & Matos, 2008; Dias *et al*., 2006), *Melaleuca alternifolia* (tea tree) (Cruz & Paixão, 2021), and *Allium sativum* (garlic) (Ribeiro *et al*., 2014; Leite & Santos, 2021).

Given the high prevalence of vaginal candidiasis caused by *Candida albicans* and the alarming recurrence rates following treatment with conventional synthetic antifungals currently available on the market, it is essential to explore and investigate new therapeutic strategies based on medicinal plants and natural products. Therefore, this study aims to review the scientific literature to identify the main herbal medicines investigated for the treatment of vaginal candidiasis and to analyze their reported efficacy.

Contextualization and analysis

The present study consists of an integrative literature review aimed at obtaining information regarding the efficacy of natural medicines in the treatment of vaginal candidiasis. The review was guided by the following research question: *"Which herbal medicines have shown the greatest prominence in the treatment of vaginal candidiasis?"* To address this question, searches were conducted in the SciELO (Scientific Electronic Library Online) and BVS (Virtual Health Library) databases. Additionally, Google Scholar was used to broaden the search for relevant articles.

The inclusion criteria adopted for article selection were: publications available in Portuguese; studies aligned with the objectives of the present research; review articles; and articles published and indexed in the aforementioned databases within the last ten years (2015–2025). Articles published in English and Spanish, duplicate studies, and those whose titles and abstracts did not meet the objectives of this research were excluded.

The search for studies in the databases was conducted during the second half of 2025. The following descriptors were used: "Vaginal Candidiasis," "Herbal Medicines," "Phytotherapy," and "Phytotherapy for the Treatment of Candidiasis," combined using the Boolean operators "AND" and "OR."

For the composition of the review, articles were initially screened through the reading of titles and abstracts, applying the established inclusion and exclusion criteria. Subsequently, full-text reading of the selected articles was performed, and studies meeting all inclusion criteria were retained. Data organization and analysis were conducted using a standardized instrument, enabling the identification and classification of relevant information, including author and year, title, objective, methodology, and main findings.

Based on the search conducted in the virtual databases using the established descriptors, a total of 20 articles were identified. After applying the exclusion criteria and screening titles and abstracts, 14 articles were pre-selected. Subsequently, full-text reading of the pre-selected studies was performed, and, following the application of the inclusion criteria, 7 articles were selected to compose the final sample of the review.

In Table 1, the selected articles were organized according to author and year, title, objective, methodology, and main findings, allowing for the synthesis of the principal information identified in the literature.

Natural products and herbal medicines have been widely used by the population for therapeutic purposes. Medicinal plants stand out due to their diverse constituents and secondary metabolites with activity against various diseases and infections, including those caused by *Candida albicans* (Andrade, 2017). With the emergence of strains resistant to conventional antifungal agents used in the treatment of candidiasis, research on plant-

derived compounds has increased significantly. Another factor supporting the use and exploration of these herbal medicines is that they represent natural, low-cost, and low-toxicity therapeutic alternatives, which may be used alone or in combination with existing antifungal agents (Ferrão *et al*., 2020).

Table 1. Comparative analysis of the effects of caffeine on individuals with anxiety disorders.

Author/Year/Title	Objective	Methodology	Main Findings
Paiva *et al.* (2017). Plantas medicinais utilizadas em transtornos do sistema geniturinário pormulheres ribeirinhas, Caravelas, Bahia.	To identify the plant species used as medicinal remedies for genitourinary system disorders by women members of the Z-25 Fishermen's Colony in the municipality of Caravelas, Bahia, as well as their methods of preparation and use.	The study was conducted on the southern coast of Bahia, Brazil, in the municipality of Caravelas, within riverside communities of the district of Ponta de Areia, the village of Barra de Caravelas, and the Cassurubá Extractive Reserve (ResexCassurubá).	A total of 13 plant species were reported for gynecological and/or urinary care, distributed across nine botanical families, with the most representative being Asteraceae (3 spp.), Anacardiaceae (2 spp.), and Malvaceae (2 spp.). According to the reports, these species are used in the treatment of candidiasis, vaginal discharge, urinary tract infections, uterine wounds, pelvic inflammation, pelvic hemorrhage, hormone eplacement, menopause ymptoms, menstrual cramps, and uterine lesions. Most of the cited medicinal plants presented a herbaceous growth habit (7 spp.), followed by arboreal (4 spp.) and shrub (2 spp.) habits.
Leite *et al.* (2025). Plantas medicinaise fitoterápicos com potencial antifúngico na região Norte- Amazônica	To evaluate the efficacy and safety of medicinal plants and herbal medicines used in the Northern Amazon region for the treatment of vaginitis and vaginosis.	A systematic search was conducted in the PubMed, LILACS, Google Scholar, and SciELO databases using the terms "medicinal plants," "herbal medicines," "vaginitis," "antifungal," and "fungicide."	Among the nine medicinal plants included in this systematic review, seven are recommended by RENISUS (National List of Medicinal Plants of Interest to the Brazilian Unified Health System). *Schinus terebinthifolius* (Brazilian peppertree) and *Maytenus ilicifolia* (espinheira-santa) are already considered safe for use. Other species, such as *Artemisia absinthium* (wormwood), *Eugenia uniflora* (Surinam cherry), *Copaifera* spp. (copaíba), *Psidium guajava* (guava), and *Stryphnodendron adstringens* (barbatimão), are also recommended and have attracted considerable scientific interest. During the preparation of the study, *Pterodon* spp. (sucupira) was excluded due to difficulties in identifying studies addressing its antifungal potential and its applications in gynecology.

An example of a widely used herbal medicine is *Rosmarinus officinalis* (rosemary), which exhibits anti-inflammatory, antifungal, antioxidant, and antibacterial activities (Oliveira *et al*., 2021). Its antifungal activity demonstrates effects similar to those of nystatin, as it significantly reduces biofilm formation through destabilization of the cytoplasmic membrane and fungal cell wall. Furthermore, it inhibits germ tube formation, impairing fungal dissemination to other tissues (Oliveira *et al*., 2021). In general, rosemary has been shown to reduce fungal ergosterol content, compromising membrane integrity (Raimundo & Toledo, 2016).

Schinus terebinthifolia Raddi (Brazilian peppertree) exhibits wound-healing, anti-inflammatory, and antimicrobial activity against fungi and bacteria (Raimundo & Toledo, 2016). Its pharmacological properties vary according to the extracted compound; for instance, the essential oil has demonstrated inhibitory activity against *Candida albicans* (Marmitt*et al*., 2016). Other species popularly known as "aroeira" have also shown antifungal potential, and several reports describe its use as a phytotherapeutic agent in female genital tract therapies. The bark and stem are particularly rich in tannins, which possess astringent properties effective against fungal infections (Pires, 2020). The most common forms of use include ointments,

infusions, sitz baths, and vaginal washes (Paiva *et al*., 2017).

Propolis extract is a bee-derived product containing multiple bioactive constituents with biocidal functions and a broad spectrum of activity. It demonstrates effectiveness against Gram-negative and Gram-positive bacteria, bacilli, cocci, yeasts, and fungi (Sobreira *et al*., 2021). Propolis exhibits antibiotic and antifungal properties and also provides symptomatic relief due to its anesthetic effects (Sobreira *et al*., 2021). It may be used in cases of recurrent vaginal candidiasis, showing favorable results and efficacy comparable to nystatin. Propolis extract solution (PES) has also demonstrated low toxicity in human cells, representing a potential alternative for the treatment of vaginitis. Its antifungal properties include antibiofilm activity in cases of recurrent vaginal candidiasis, neutralizing *Candida albicans* biofilm growth and reducing antifungal resistance (Sobreira *et al*., 2021).

Another commonly used herbal medicine is *Curcuma longa* (turmeric), which exhibits pharmacological, antifungal, and antimicrobial properties (Solano *et al*., 2020). It also demonstrates anti-inflammatory and antitumor activities. Its rhizome contains three main phytochemical components, classified as curcuminoids, which are polyphenolic compounds (Ribeiro *et al*., 2018). Its antifungal activity is associated with the reduction of ergosterol in the fungal cell membrane, inhibition of hyphal formation, and decreased production of proteinases, ultimately leading to fungal cell death (Paul *et al*., 2018). Curcumin administration has been shown to be safe, presenting low toxicity and good tolerability in in vivo studies (Andrade, 2017; Ribeiro *et al*., 2010).

Allium sativum (garlic) contains metabolites such as alkaloids, allicin, saponins, and tannins, which exhibit antimicrobial, antiviral, antibacterial, and antifungal effects (Leite & Santos, 2021). Its primary immunomodulatory effect is attributed to allicin, which promotes proliferation of CD4+ T lymphocytes and macrophages. For the treatment of candidiasis, the most appropriate form of administration is the essential oil, which acts on fungal cellular organelles, leading to cell death (Leite & Santos, 2021; Sanches *et al*., 2020).

Origanum vulgare (oregano) is another medicinal plant extensively studied. Its essential oil demonstrates insecticidal, antibacterial, antioxidant, and antifungal activities. In some studies, the essential oil of *Origanum onites* exhibited greater antifungal activity than ketoconazole. This activity is related to its interaction with fungal surface proteins, inhibiting formation and promoting eradication of biofilms. Oregano oil can be administered in capsule formulations or in liquid form (Hacioglu*et al*., 2021).

Another compound that may be used is *Stryphnodendron adstringens* (Mart.) Coville (barbatimão). It is typically prepared from the bark and stem through decoction for sitz baths or oral use and is frequently utilized by adults with limited access to healthcare services, including Indigenous and quilombola communities. Its extract exhibits anti-inflammatory and astringent effects and is used in the treatment of wounds and vaginal infections (Freitas *et al*., 2018). Its antifungal property is attributed to the presence of tannins, which inhibit the growth of *Candida albicans*. Its use may serve as an alternative to synthetic antifungals, potentially reducing the likelihood of adverse effects (Fernandes & Maria, 2011).

Tea tree essential oil (*Melaleuca alternifolia*) is composed of terpene hydrocarbons, including monoterpenes and sesquiterpenes, as well as their associated alcohols. It exhibits a broad spectrum of activity, including immunomodulatory, anti-infective, analgesic, radioprotective, and anti-inflammatory effects. Its antifungal property is particularly noteworthy, as it plays a significant role in combating vaginal candidiasis. According to Baldoux (2018), antifungal essential oils act on fungal cell membranes and endomembrane structures, as well as on the production of secreted toxins. Studies have demonstrated that tea tree essential oil reduces biofilm formation, decreases cellular adhesion, and induces membrane disruption leading to fungal cell death. It may be applied through sitz baths or local irrigation in areas affected by *Candida* species (Cruz & Paixão, 2021).

Copaifera langsdorffii (copaíba) is one of the most widely used and recognized medicinal plants in Brazil. Its main pharmacological properties are attributed to compounds such as copalic acid and various sesquiterpenes (Quemel*et al*., 2021). Ethnopharmacological indications are diverse and include antiblenorrhagic, antiseptic, and anti-inflammatory uses, as well as applications in the treatment of syphilis, asthma, among other clinical conditions (Yamaguchi & Garcia, 2012). With documented fungicidal effects against fungi of the genus *Candida*, experimental studies have demonstrated the significant efficacy of copaíba-derived essential oils (Araújo *et al*., 2022). Copaíba oil has shown promising activity against clinically relevant yeasts and dermatophytes, with efficacy comparable to that of commercial antifungal agents (Lima *et al*., 2021).

Conclusion

Based on the analysis of the findings, herbal medicines represent a promising therapeutic alternative in the management of vaginal candidiasis, particularly in light of the increasing resistance of *Candida albicans* to synthetic antifungal agents.

The natural extracts and plants discussed—such as rosemary, Brazilian peppertree, garlic, turmeric, propolis, oregano, barbatimão, tea tree, and copaíba oil—demonstrate significant pharmacological properties. These include anti-inflammatory, antifungal, antimicrobial, and immunomodulatory effects, acting through multiple mechanisms, ranging from inhibition of biofilm formation to destabilization of the fungal cell membrane.

The reported findings reinforce the potential of these compounds as low-cost, widely available, and low-toxicity alternatives, which may be used either as complementary therapies alongside synthetic antifungals or as standalone treatments. Several of these natural agents have demonstrated efficacy comparable to, or even greater than, commonly used antifungal drugs such as nystatin and ketoconazole, particularly in recurrent cases of candidiasis.

Despite advances in scientific research, it remains essential to invest in more robust clinical studies to evaluate dose standardization, routes of administration, and possible drug interactions. Such investigations are necessary to consolidate the clinical use of these herbal medicines with stronger scientific evidence.

Therefore, it can be concluded that natural medicines represent a relevant and viable therapeutic strategy for women's health, contributing to a more integrative, effective, and safe approach to the treatment of vaginal candidiasis.

Acknowledgment

The authors would like to thank Centro Universitário Maurício de Nassau for the institutional support and encouragement of research. They also thank collaborators from other institutions for their scientific contributions, as well as the course coordinations for their academic and administrative support, which were fundamental to the completion of this study.

References

Baudoux, D. O grande manual de aromaterapia de Dominique Baudoux. Trad.: Mayra Corrêa e Castro. Belo Horizonte. Editora Lazslo. 2018.

Bezerra DER, Belém GG, Gontijo EEL. Candidíase vulvovaginal em gestantes: uma revisão integrativa da literatura. E-Acadêmica. 2022. 3(2), e2232153-e2232153.

Corte FH, Nogueira A, Paganotte DM. Uso do extrato de própolis no tratamento da candidíase. Revista Ibero-Americana de Humanidades, Ciências e Educação, 2022. 8(10), 4592-4606.

Costa EGR, Campos ACC, Souza ÁPS. Terapias para o tratamento de candidíasevulvovaginal. Referências em Saúde do Centro Universitário Estácio de Goiás. 2020. 3(02), 61-67.

Cruz JS, Ramos LM, Filadelpho LA, Brito GC, Sousa MM, Cruz GS, Silva EF. Candidíase vulvovaginal recorrente, atualização terapêutica fitoterápica: uma revisão de literatura. Revista Eletrônica Acervo Saúde. 2022. 15(11), e11220-e11220.

de França AEC, TorresBP, da Silva Gomes S, Rosa DCB, da Silva TF. Tratamento de candidíase oral em pacientes com HIV/AIDS: revisão narrativa. Brazilian Journal of Health Review, 2024. 7(9), e74307-e74307.

Leite GMC, Dias LE, Alves MBM, Farias SAA, de Jesus Quintino B, de Oliveira Tannus L, Costa MDJC. Plantas medicinais e fitoterápicos com potencial antifúngico na região Norte-Amazônica. Observatorio de La Economía Latinoamericana, 2025. 23(4), 140.

Paiva KO, Oliveira GL, Farias DF, Muller TS. Plantas medicinais utilizadas em transtornos do sistema geniturinário por mulheres ribeirinhas, Caravelas, Bahia. Revista Fitos Eletrônica. 2017. 92-98.

Queiroz Alves K, de Oliveira ACA, Cavalcanti DDSP, Batista FL. Aspectos gerais da candidíase vulvovaginal: uma revisão de literatura. Saúde & Ciência em ação. 2022. 8(1), 1-14.

Raimundo JDS, De Toledo CEM. Plantas com atividade antifúngica no tratamento da candidíase: uma revisão bibliográfica. Uningá Review. 2017. 29(2).

Ribeiro, DA., Macêdo, DG., Oliveira, LGS., Saraiva, ME, Oliveira, SF, Souza, MMA,Menezes, IRA. Potencial terapêutico e uso de plantas medicinais em uma área de Caatinga no estado do Ceará, nordeste do Brasil. *Revista brasileira de plantas medicinais*, 2014. *16*(4), 912-930.

Scalabrin AC, Sousa MM, Iudice ACCB, Costa AJS, Muto NAM. Utilização do óleo essencial de TEA TREE (*Melaleuca alternifolia* Cheel) em mulheres com candidíase vulvovaginal: uma revisão sistemática. Almeida Junior AS. Produtos naturais e suas aplicações: da comunidade para o laboratório. Guarujá: Científica digital. 2021. (1)181-200.