IJPSR (2023), Volume 14, Issue 2 (Case Study)

INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES AND RESEARCH

Received on 12 June 2022; received in revised form, 23 July 2022; accepted, 05 August July 2022; published 01 February 2023

META-ANALYSIS OF HERBAL CURE FOR PITYRIASIS VERSICOLOR: A CASE REPORT

Puranapanda Suvarna Siddeswari [*1], Kiranmai Mandava [1] and Sneha Thakur [2]

Department of Pharmacy Practice [1], Department of Pharmacognosy [2], St. Pauls College of Pharmacy, Turkayamjal, Hyderabad - 501510, Telangana, India.

Keywords:

Pityriasis Versicolor, Herbal remedy, *Malassezia furfur*, Fluconazole, Lifestyle modifications

Correspondence to Author:
Puranapanda Suvarna Siddeswari

Department of Medicinal Chemistry, St. Pauls College of Pharmacy, Turkayamjal, Hyderabad - 501510, Telangana, India.

E-mail: suvarnasiddeswari1999@gmail.com

ABSTRACT: Background: Pityriasis Versicolor (PV) is a cutaneous fungal infection of the skin revealed by changes in skin pigmentation due to colonization by a dimorphic lipophilic fungus of the skin, known as *Malassezia furfur*. There is an impact on the psychological status of patients resulting in anxiety or depression. This disease is predominant in warm and hot climates. Currently, no ideal drug of choice exists with minimal side effects to treat PV. **Objective:** To assess the incidence, characteristics of the lesions, and effectiveness of the herbal procedure. **Aim:** To treat PV individuals with herbal treatment by minimizing side effects. **Methods:** The herbal cure was chosen based on a preferable study; different types of herbs used are Neem powder, herbal baths, turmeric, and streaming, which helped to clear PV patches present on the skin. The diagnosis is clinical, but a direct examination must be done. The present clinical research study is on the potentiation of the body's ability to eliminate PV by manipulating the diet and managing lifestyle for PV. **Results:** Herbal remedy succeeded in curing severe PV over eight weeks and with complete healing, which might be used in the treatment regimen. There are no side effects observed during herbal treatment. In addition, an altered diet has supported the alleviation of PV. **Conclusion:** Herbal cure helped to manage PV. Lifestyle modifications potentiated incomplete elimination of PV.

INTRODUCTION: PV is a fungal cutaneous pigmentation disorder relating to the patch reaction. Consequently, individuals who are exposed to sunlight disclose pre-existing spots more transparently so it is called Beach Ringworm [18]. PV is also referred to as Tinea versicolor, *Dermatomycosis furfuracea, Tinea flava, lota*. A genus named *Malassezia sp*. is often generated by lipophilic yeast.

QUICK RESPONSE CODE

DOI: 10.13040/IJPSR.0975-8232.14(2).946-51

This article can be accessed online on www.ijpsr.com

DOI link: http://dx.doi.org/10.13040/IJPSR.0975-8232.14(2).946-51

PV was first acknowledged as a fungal cutaneous disease by Eichsedt in 1846 [17]. They are affected on the back, chest, abdomen, neck, face and upper limbs [3, 24]. There are different kinds of *Malassezia sp*. like *M. furfur, M.sympodialis, M. glovosa, M. pachydermatis, M. obtusa, M. restricta* and *M. slooffiae*. Out of these one species [4] require external lipids for development. For a long time, the abnormal condition of PV was due to *M. furfur* [21, 19, 9].

Based on lipid requirement and pathogen city, the two *Malassezia* species are distinguished as lipid-dependent *Malassezia furfur* (Robin) Baillon and Non-lipophilic species *Malassezia pachydermatis* (weidman) C.W.Dodge.

Fungal cutaneous infection occurs in both males and females of all races. Patients from infancy to old age are also affected. It is more recurrent in young, post-puberty adults, presumably due to alterations in the physiology of skin surface lipids during puberty [9].

Clinical manifestations are established due to scaly patches with specific or limited distribution, which can be diagnosed by skin biopsy, Scotch tape test, Potassium hydroxide mount and culture and ultraviolet black light (wood lamp), Ziler's sign method [18]. PV is based on clinical disclosure of lipophilic mycosis. It is mostly known as dandruff and is often correlated with colonization by *Malassezia* species [18]. PV infection is an obstinate fungal disease that annoyance dermatologists a lot. Genus *Malassezia (pityrosporum*) [8] of the yeast has a symbiotic association on the skin of warm-blooded vertebrates and cultured from all over the body areas in a century [17]. They become pestilent under certain conditions and are related to a broad spectrum of clinical complications such as PV, folliculitis [8], seborrheic, dermatitis, some forms of atopic dermatitis, confluent and reticulate, papillomatosis, and even systemic infection. PV infection is not contagious and is triggered by humidity, high temperature, familial factors, and poor immunity [7]. Currently, 50% of high cases are found in tropical countries, and 1.1% of low cases are found in cold climates [12].

Mostly, individuals feel insecure due to skin infections which may lead to primary psychiatric disorders or mental illness, though it is not much studied and debated [14]. PV responds well to medical therapy, but the lesions can persist for months following successful treatment of PV. The treatment of choice is topical therapy with azole antifungals, selenium sulfide, and zinc pyrithione. The Systemic therapy with oral azole antifungals such as itraconazole and fluconazole is typically reserved for individuals with widespread PV, or for individuals who have failed topical therapy. However, oral therapy is not typically used for the treatment of PV in children. Oral or Systemic antifungals are used in treating a variety of infections, but are having serious side effects. Fluconazole is a triazole antifungal drug. It is orally administered, well tolerated, non-toxic & penetrates many tissues. It inhibits cytochrome p450 enzymes that target 14-alpha-sterol demethylase [20, 7]. It also has severe side effects like chronic fatigue, stomach pain, sweating, and weakens the immune system. Some articles and websites portray using selenium sulfide or ketoconazole shampoo once monthly, or individuals may take itraconazole once monthly during the year's warm months as beneficial. Now, recurrence of PV is common [6] so, long-term prophylactic therapy may be necessary. In most individuals, herbal cures and altered diets will be beneficial.

Epidemiology: PV was reported globally but more prevalent in hot and humid climates[8]. The recurrence rates (80%) were high in the tropical zones such as the Equator and parts of North America, South America, Africa, Asia, and Australia; just 1.1% of cases were reported in cold climatic countries like Estonia, Finland, Mongolia, Iceland, Greenland, Alaska, Canada, Russia, and Antarctica. PV persists more in teens and youngsters [16] due to sebum production with rich lipids where Malassezia can grow. Both females and males are equally affected. It is also seen in pediatrics under the age of 2 years[12].

Mycology: A group of *Malassezia sp.* are lipophilic and mostly found on human skin. They are located in the seborrheic skin like the face, neck, chest, and back. The dimorphic eukaryotic fungus *Malassezia furfur* can cause PV and then transform to the pathogenic filament by various factors, including genetic, environment such as hot and humid climate, immunodeficiency, pregnancy, and oily skin. The pathophysiology is unclear for PV[21]. Mainly fungal infections are due to individual immunity conditions. This infection is common in hot temperatures [8], humid environments, and overexposure to sunlight. Hence the infection is frequent in tropical countries [1]. Using synthetic clothing such as nylon and rayon alters the cutaneous pH and microbiome, worsening the condition.

Clinical Presentation: There are various kinds of colored patches that can be hypochromic hyperchromic or erythematosus [11, 8, 1]. Morphologically, they are dotted, nummular, lenticular reticular, or follicular. The color of patches can be pink, dark brown, or light brown

color and they can cause acidic bleaching. The spreading of infection is more frequent in seborrheic areas like the face, neck, trunk, and arms [1, 26]. PV is not contagious, and scaly patches are asymptomatic. Due to alterations in climatic conditions, the patches can itch. The individuals can also have psychiatric disturbances such as anxiety and depression due to skin infection[14].

Diagnosis: The clinical diagnosis is based on hypochromic, hyperchromic, erythematous, or scaly patches.

1. Scotch Tape test: The patches are examined by scraping the skin tissue directly with a nail or with an instrument called the Besnier sign or the nail or transparent adhesive tape. This test is mostly performed for younger children [1].

2. Microscopic Examination: The lesions are examined microscopically by using 10% potassium hydroxide or Alber's solution (toluidine blue, malachite green, glacial acetic acid, ethanol & distilled water). Purple fluorescence is observed in clustered yeasts [1].

3. Wood's Lamp Examination: Careful examination is usually done by Wood's lamp. As it gives yellow color in most of the individuals when light is allowed directly on the lesions [5].

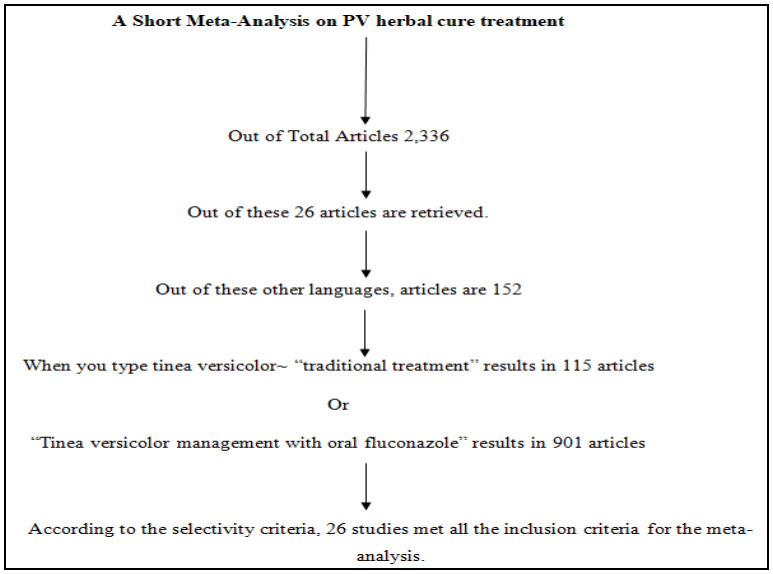
4. Potassium Hydroxide (KOH) Mount & Culture test: This is inexpensive and can be tested for an organism's presence. Lesions are examined using staining procedures and the morphology tendency [2, 25].

5. Skin Biopsy: The affected skin cells are scraped out and tested under microscopic. It analyses for any signs of skin cancer and other feasible infections [12].

RESULT AND DISCUSSION: PV dermatologic conditions are most common worldwide. The yeast fungus *Malassezia furfur* interferes with the pigmentation of the skin. This cutaneous fungal infection results in patches known as PV. PV is not contagious as it is mostly seen in teens. Preventing the recurrence of infection is a critical one. Various treatments are effective in alleviating symptoms and curing the infection. Hyperpigmentation or hypopigmentation [11, 8, 1, 27, 30] may persist if left untreated, and it could take time to recover the infection. There is an impact on psychological disturbances [14].

The advantages of herbal remedies are slow-acting and well-tolerated nature [28]. There is no risk of adverse effects and a slight decrease in patch size on skin and color with herbal medications. The case study implicated using herbal remedies without antifungals as a better treatment regimen to prevent PV.

Meta-analysis of Herbal Cure Treatment: Herbal remedies are extremely effective in dealing with PV infections. Herbal remedies have particular mild antibiotic and antifungal properties, are used in treating PV. Herbal remedies are used for clearing up PV infections **Fig. 1** using streaming, herbal baths and neem showed a miracle reduction in the patch size of PV infection.



After screening out, 2,336 pooled articles met all the inclusion criteria for meta-analysis. Streaming could potentiate hydration and act as a cleanser for the infected and dead skin cells. The condensation of the body with warm steam helped to clean the dirt and repair the dead tissues. Exfoliation could clear 60 % of PV infection [22].

Herbal baths containing medicaments like turmeric, seaweed, ginger, milk, rosemary, thyme, neem, and nettles could aid in healing and maintaining a good balance of skin health. Turmeric water bath consisted of antiseptic, antifungal, and anti-inflammatory properties. Bathing with turmeric water could reduce further flaring up of PV [25].

Neem and honey act as a miracle herb used for ages in skin infections. The neem has phytoconstituents with antimicrobial properties that reduce the itchiness and further blaze up PV infection. There are side effects with allopathic treatment compared to herbal cure. The clinical intervention follows herbal treatment [24].

TABLE 1: RECOMMENDATIONS FOR ALTERATION OF DIET IN PV

S. no.	Diet	Examples
1.	Diary	Ghee, Butter
2.	Herbs, Spices and Condiments	Basil, Cinnamon, Salt and Turmeric
3.	Low Sugary Fruits	Lemon, Lime and olives
4.	High fibre rich Vegetables	Broccoli, Cabbage, Brussels sprouts, Spinach and Tomatoes.
5.	Non-Glutinous grains	Millet and Quinoa
6.	Healthy Proteins	Chicken, Eggs, Salmon
7.	Low Mould Nuts and Seeds	Almonds, Coconut and Flax seeds
8.	Drinks	Filtered water, Herbal teas

PV is also treated using the antifungal drug Fluconazole, which is given at 50mg weekly for four weeks. The inhibition of infection is not effective.

Patient Perspectives of Case Study Report: I first discovered I had some patches on my skin. That was a massive shock because I felt fine- the skin infection had settled down by the time they did a physical examination. Then they said this is one kind of fungal infection growing on my skin. You automatically think it's a fungal infection and your mind always goes to the worst-case scenario. They took the examination, ran tests, and told me the results. The skin infection was due to yeast called PV. The infection was mild-to-moderate so, they prescribed me a fluconazole tablet 15mg to be used weekly for 5 weeks.

About a month later, I found out the yeast growth on my skin did not stop. But I have encountered severe complications like severe stomach pain, sweating, chronic fatigue, and a weak immune system every time I have the tablet. After all these complications that I had gone through, I decided to go with the herbal treatment. During my herbal therapy, I felt ok without complications. The patch size started reducing from a week itself. After eight weeks, I was so happy to see my skin; no patch was left on my body. My family motivated me a lot during the herbal treatment.

Home Message: Promoting the Body's Potential to Treat PV using Herbal Cure: Improve the immune system by eating plenty of fruits and vegetables containing vitamins, minerals, antioxidants, citrus fruits, and leafy green vegetables. Take a look at the table for recommendations for diet. Vitamins are the main source in maintaining immunity [29]. They are the most common deficient elements in PV individuals. The use of multivitamins or multi minerals elements is beneficial [10]. Probiotics contain good high-quality bacteria, which is a healthy digestive supplement. Yogurt is rich in probiotics and it Fights against yeast growth by preventing the recurrence of PV. A low-carb diet can help you avoid sugars, as carbohydrates are converted to sugars on digestion. Sugars act as food sources for yeast infection. Avoid processed foods and baked foods as this kind of stuff irritate the skin during yeast infection [10].

Extreme heat and sweating on sun exposure can cause rashes, so avoiding sunlight and using sunscreens are recommended for PV individuals[15]. Shower every day to get rid of sweat. Prefer breathable fabrics such as cotton. This aids in maintaining moisture-free skin. PV gradually disappeared with this herbal remedy and succeeded in curing severe PV in about eight weeks. **Fig. 1** shows a rapid healing rate of PV lesion by herbal cure through eight weeks.

FIG. 1: HEALING OF *M. FURFUR* GROWTH IN PV BY HERBAL REMEDIES. A: CLINICAL REPRESENTATION OF A SELF CASE AT THE BEGINNING OF PV INFECTION; B: A HEALING STAGE AFTER FOUR WEEKS OF TREATMENT; C: COMPLETE HEALING AFTER EIGHT WEEKS OF TREATMENT

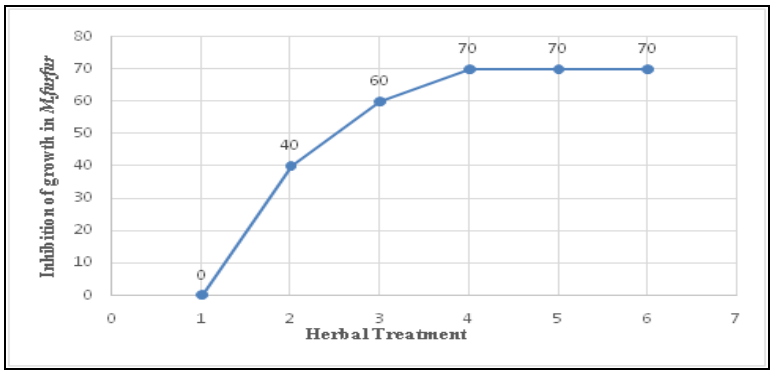


FIG. 2: EFFECT OF HERBAL REMEDY ON M. FUFUR GROWTH IN COMPARISON TO STANDARD ANTIBIOTIC FLUCONAZOLE. B. ANOVA TEST TO COMPARE BETWEEN HERBAL REMEDIES AND FLUCONAZOLE EFFECTS

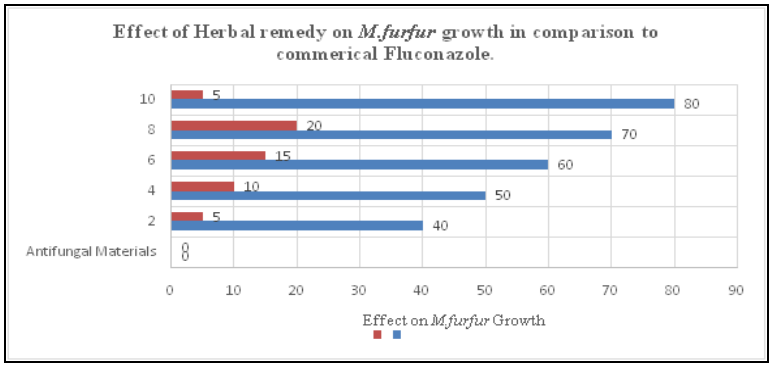


FIG. 3: ESTIMATION OF ANTIFUNGAL MATERIALS ON *M. FURFUR* GROWTH IN COMPARISON WITH HERBAL TREATMENT TO STANDARD DRUG FLUCONAZOLE

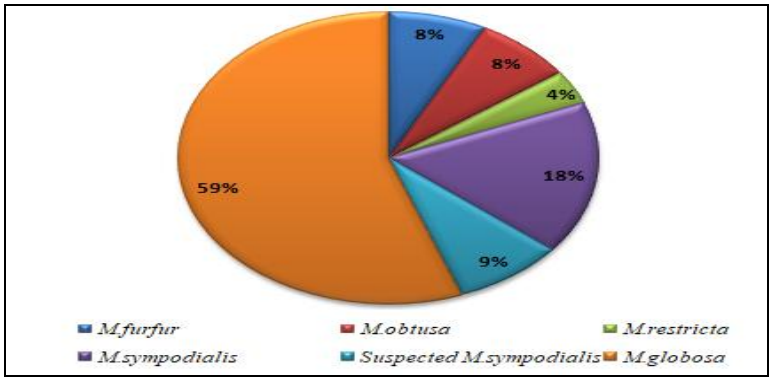


FIG. 4: ESTIMATION OF INDIVIDUALS WITH AFFECTED WITH THE PV BY DIFFERENT SPECIES OF MALASSEZIA 4

CONCLUSION: PV infections can be treated very successfully using herbal treatments. Herbal medicines are utilised to treat PV because they have specific, mild antibacterial and antifungal characteristics. Neem exhibited a miraculous reduction in the size of the PV infection patch when used in conjunction with herbal baths and streaming to treat PV infections. PV management was aided by herbal treatment. Changing your lifestyle accelerated the partial eradication of PV.

ACKNOWLEDGEMENT: The authors are thankful to the management of St. Pauls College of Pharmacy for its support and facilities.

CONFLICTS OF INTEREST: There are no conflicts of interest for the authors.

REFERENCES:

1. Angel MAL, Andrade LGM, Lòpez LEO, Valencia AMR and Romero HV: Hyperchromic and Erythematous Pityriasis: Case Report and Review of the Literature. J Dermatol Res Ther 20195; 073.
2. Arif T: *Acral pityriasis* versicolor-A rare clinical presentation. Our Dermatol Online 2015; 6: 196-7.
3. Burke and Tinea versicolor RC: susceptibility factors and experimental infection in human beings. Journal of Investigative Dermatology 1961; 36(5): 389-401.
4. Chaudhary R, Singh S, Banerjee T and Tilak R: Prevalence of different *Malassezia* species in pityriasis versicolor in central India. Indian J Dermatol Vernereal Leprol 2010; 76(2): 160.
5. David Ponka and Faisal Baddar: Wood lamp examination. Canadian Family Physician 2012; 58(9): 976.
6. Framil VMDS, Melhem MS, Szeszs MW & Zaitz C: New aspects in the clinical course of pityriasis versicolor. Anais Brasileiros de Dermatologia 2011; 86: 1135-1140.
7. Gupta AK & Foley KA: Antifungal treatment for pityriasis versicolor. Journal of Fungi 2015; 1(1): 13-29.
8. Gupta AK, Batra R, Bluhum R, Boekhout T & Dawson TL: Skin diseases associated with *Malassezia* species. J of the American Academy of Derm 2004; 51(5): 785-798.
9. Gupta AK, Kohli Y, Faergemann J & Summerbell RC: Epidemiology of *Malassezia* yeasts associated with pityriasis versicolor in Ontario, Canada. Medical Mycology 2001; 39(2): 199-206.
10. Karakaş M, Durdu M & Memişoğlu HR: Oral fluconazole in the treatment of tinea versicolor. The Journal of Dermatology 2005; 32(1): 19-21.
11. Karray M & Mckinney WP: Tinea Versicolor, in The Tinea Versicolor: Statpearls, edited by Statpearls Publishing LLC. (Treasure Island (FL) 2020; 8766.
12. Kaymak Y and Taner E: Anxiety and depression in patients with pityriasis rosea compared to patients with tinea versicolor. Dermatology Nursing 2008; 20(5): 367.
13. Moftah NH, Kamel AM, Attia HM, El-Baz MZ & Abd El–Moty HM: Skin diseases in patients with primary psychiatric conditions: a hospital based study. Journal of Epidemiology and Global Health 2013; 3(3): 131-138.
14. Ngatu NR, Saruta T, Hirota R, Eitoku M, Muzembo BA, Matsui T & Suganuma N: Antifungal efficacy of Brazilian green propolis extracts and honey on *Tinea capitis* and Tinea versicolor. European JIM 2011; 3(4): 281-87.
15. Rai MK & Wankhade S: Tinea versicolor–an epidemiology. J Micro Biochem Technol 2009; 1(1): 51-6.
16. Santana JO & Azevedo FLAD: Pityriasis versicolor: clinical-epidemiological characterization of patients in the urban area of Buerarema-BA, Brazil. Anais Brasileiros de Dermatologia 2013; 88: 216-221.
17. Sharma A, Rabha D, Choraria S, Hazarika D, Ahmed G & Hazarika NK: Clinicomycological profile of pityriasis versicolor in Assam. Indian Journal of Pathology and Microbiology 2016; 59(2): 159.
18. Silva LN, de Souza Ramos L, Branquinha MH and Dos Santos ALS: Current challenges and updates on the therapy of fungal infections. Curr Top Med Chem 2019; 19(7): 495-499.
19. Theelen B, Cafarchia C, Gaitanis G, Bassukas ID, Boekhout T & Dawson TL: Malassezia ecology, pathophysiology and treatment. Medical Mycology 56(1): 2018; 10-25.
20. Visioli F, Bellosta S, Galli C and Oleuropein: The bitter principle of olives enhances nitric oxide production by mouse macrophages. Life Sciences 1998; 62: 541-6.
21. Moreno JJ, Carbonell T, Sanchez T, Miret S and Mitjavila MT: Olive oil decreases both oxidative stress and the production of arachidonic acid metabolites by the prostaglandin G/H synthase pathway in rat macrophages. J Nutr 2001; 13: 2145-9.
22. Carbajal D, Molina V and Voltes S: Anti-inflammatory activity of D-002:an active product isolated from beeswax. Prostaglandin Leukot Essent Fatty Acids 1998; 59: 235-8.
23. Al-Waili N and Boni N: Effects of honey ingestion on nitric oxide in saliva. FASEB J 2003; 17: 1250.
24. Al-Waili N: Two cases of psoriasis and high doses of indomethacin. Emer Med J 1987; 5: 61-3.
25. Baby MS, Jose D, Mathew AK, John B and Antony AV: Novel phytotherapy for tinea versicolor by extracting *Zingiber wightianum* thwaites. International Journal of Pharmaceutics and Drug Analysis 2021; 143-50.
26. Ferry M, Shedlofsky L, Newman A, Mengesha Y and Blumetti B: Tinea in Versicolor: a rare distribution of a common eruption. Cureus 2020; 12(1).
27. Woo TE, Somayaji R, Haber RM and Parsons L: Diagnosis and management of cutaneous tinea infections. Advances in Skin & Wound Care 2019; 32(8): 350-7.
28. Ciano F, Biancone M, Zanfini BA, Catarci S and Draisci G: Can I have epidural analgesia if I have tinea versicolor. Journal of Clinical Images and Medical Case Reports 2021; 2(3): 1189.
29. Thombare C, Shekokar S and Kharat R: A review of ayurvedic management on sidhma kushta with special reference to *Tinea versicolor* Pityriasis versicolor) 2019; 8: 7-12.
30. Mohammad AP, Goodarzi F and Ghassemi M: Comparing the Plasma Level of Vitamin D in Patients with *Tinea versicolor* and Healthy Individuals. European Journal of Molecular & Clinical Medicine 2020; 7(06).
31. Mathur M, Acharya P, Karki A, Nisha KC and Shah J: Dermoscopic pattern of pityriasis versicolor. Clinical Cosmetic and Investigational Dermatology 2019; 12: 303.

How to cite this article:
Siddeswari PS, Mandava K and Thakur S: Meta-analysis of herbal cure for Pityriasis Versicolor: a case report. Int J Pharm Sci & Res 2023; 14(2): 946-51. doi: 10.13040/IJPSR.0975-8232.14(2).946-51.