



Case Report

Sustainable and Low-Cost Ayurvedic Management of Tinea Corporis: A Case Report

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Abstract

Fungal infections are highly prevalent disease. Tinea Corporis is one among dermatophytosis or ringworm, which is characterized by the presence of single or multiple well-defined erythematous plaques with an annular border and scaling associated with severe itching. Tinea Corporis, in particular, can be correlated with *Dadru Kushtha*, a condition described under the minor skin disease category known as *Kshudra Kushtha*. This study aimed to show the sustainable and low-cost efficacy of the common Ayurvedic medicine called *Shuddha Tankana Bhasma* in the treatment of Tinea Corporis through a detailed case report. In this case study, a 33-year-old male patient diagnosed with Tinea Corporis was treated exclusively with *Shuddha Tankana Bhasma*, formulated as a topical cream. The treatment regimen was followed precisely twice daily for 45 days. After 45 days of consistent application, the patient experienced complete resolution of the skin lesions and associated symptoms. An experimental study on *Shuddha Tankana Bhasma* carried out at the Department of Microbiology in Dr. G.C. Negi College of Animal and Veterinary Sciences, Palampur and Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishwavidyalaya, Palampur, demonstrated 100% inhibition effect against the isolated strain of dermatophyte in vitro study and was found clinically effective in the treatment of onychomycosis. *Tankana* is easily available and has abundant resources in the form of a natural compound called Sodium Borax, which is very low-priced. This case report highlights the potential of using *Shuddha Tankana Bhasma* as an effective, low-cost, and sustainable Ayurvedic intervention for managing common dermatophytosis like Tinea Corporis

Keywords: Dermatophytoses, Fungal infection, *Dadru Kushtha*, *Shuddha Tankana Bhasma*, Borax, Sodium Tetraborate, *Lepa*

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Introduction

Fungal infections are becoming a common disease in India and are also becoming a growing global health concern. Dermatophytosis or ringworm, is a type of skin condition brought on by a particular kind of fungus called dermatophytes. Tinea Corporis is one among dermatophytoses, which is characterized by the presence of single or multiple well-defined erythematous plaques with an annular border and scaling associated with itching. (1) By definition, it includes lesions of the trunk and limbs, excluding ringworms of specialized sites such as the scalp, feet and groin.

Almost all skin disorders are described under the broad term *Kushtha* in Ayurveda. Among the minor group of skin diseases

called *Kshudra Kushtha*, Tinea Corporis can be correlated with *Dadru Kushtha*. It is a *Tridoshaja Vyadhi* characterized by a dominance of *Pitta* and *Kapha Dosha*, exhibiting features such as *Utsanna Mandala* (an elevated circular skin lesion), *Kandu* (itching), *Raga* (erythema), and *Pidaka* (eruptions). The conventional treatments for Tinea Corporis include various topical and systemic antifungal and antihistamines. Fungal infections have a higher rate of recurrence and, if left untreated, can lead to the development of more severe diseases. Various experimental in vitro studies have found *Tankana* as clinically effective in the treatment of fungal infections. *Tankana* is easily available and has abundant resources in the form of a natural compound called sodium borax, which is very cheap.

Case Study

Patient Information

A 33-year-old male, residing in Tehsil Baijnath, District Kangra, Himachal Pradesh, presented to the Skin Care Unit and Derma Research Lab (OPD No. 715) of Rajiv Gandhi Government Post Graduate Ayurvedic College and Hospital (RGGPGACH), Paprola – 176115, on June 15, 2024. He reported itching and rashes over the buttock region, persisting for approximately 25 days. Before this consultation, he had not taken any formal medical treatment,

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but attempted self-management using home remedies, specifically the application of coconut oil, which provided minimal relief. Due to the persistence and progression of the symptoms, he approached RGGPGACH, Paprola, for further treatment.

Clinical findings

A detailed history was taken, which was followed by a local physical examination. A single, well-defined erythematous plaque with an annular border and peripheral scaling was observed in the buttock region, particularly around the natal cleft. The patient reported intermittent itching over the lesion. The detailed clinical findings based on the nature of the lesion are described in Table 1, and the image of the site is Figure 1. The patient had no significant past medical history of chronic illnesses such as type 2 diabetes mellitus, hypertension, thyroid disorders, or pulmonary tuberculosis. The vital details, CBC and LFT, were within the normal limits. His pulse rate was 72 bpm, and blood pressure was 120/80 mm/Hg.

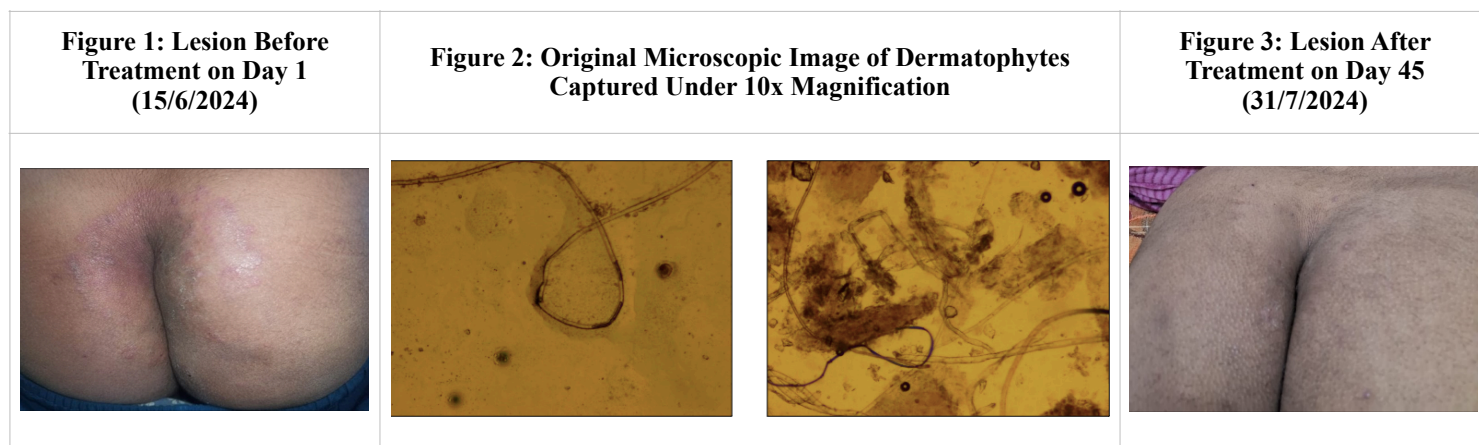
Diagnostic Assessment

Potassium Hydroxide (KOH) mount and Wood's Lamp Examination were two diagnostic methods performed on the same day of the patient's first visit at the OPD. A KOH mount test was performed using skin scrapings taken from the active margin of

the lesion where scaling was present. The microscopic examination under low power (10x) magnification confirmed the KOH test positive, showing the presence of septate hyphae, which is indicative of the presence of dermatophytes (Figure 2). No fluorescence was observed under Wood's Lamp Examination. Based on the presenting complaints and diagnostic measures, the condition was diagnosed as *Dadru Kushtha*. It corresponds to Tinea Corporis, which is a Dermatophytosis (fungal infection).

Table 1: Clinical Findings Based on the Nature of the Lesion

Nature of Lesion	Clinical Findings
Primary Lesion (Macule / Papule / Vesicle / Pustule / Plaque / Atrophy / Hyperkeratosis)	Plaque
Secondary Lesions (Scale / Crust / Excoriation / Fissure / Scar / Lichenified / Maceration)	Scale
Distribution (Linear / Circinate / Annular / Geographical / Unilateral / Bilateral)	Unilateral
Symmetry (Symmetrical / Asymmetrical)	Asymmetrical
Onset (Acute / Chronic)	Acute
Eruption (Active / Quiescent)	Active



Therapeutic Interventions

The patient was treated on an OPD basis. A written informed consent was taken before treatment. The treatment consisted only of topical medicine, and no internal/oral medicine was given. A *Tankana* Cream was prepared at the college pharmacy. It consisted of three ingredients: *Shuddha Tankana Bhasma*, light liquid paraffin, and microcrystalline wax. After a proper homogenous mixture, it was made into a cream form and was administered to the patient for local application over the lesion, as shown in Table 2.

Table 2: Tankana Cream Dosage, Duration, and Application Method

Duration	Dosage and Time	Method of Application
Day 1 – 45 15/6/2024 to 31/7/2024	Quantity Sufficient for local application twice a day.	Clean the area properly before application. Apply over the lesion and also a few centimeters away from its border.

Diet and Regimen Advised

The patient was advised to avoid diets that vitiate *Kapha* and *Pitta Doshas*, such as black gram, curd, spicy and sour taste predominant foods, etc. He was advised to maintain personal hygiene and the cleanliness of the living area at home, such as washing bed sheets, pillow covers, and personal clothing properly and completely sun-dried, leaving no moisture. In addition to this, sitting in wet clothes or sweating for long periods, using synthetic innerwear, or tight jeans, sharing personal items (clothes, bedsheets, towels), and applying oily substances to active fungal lesions were restricted for the patient.

Follow Up and Outcomes

On consistent application of *Tankana* cream along with proper dietary and lifestyle regimens, the patient visited the OPD on July 31, 2024, for the last time. He experienced complete relief from all the associated symptoms, as shown in Table 3 and Figure 3. To confirm any presence of dermatophytosis, a KOH mount was attempted, but was unfeasible due to the complete absence of scaling and the absence of fungal elements in the sample. This provided strong evidence of mycological cure. Hence, it proved complete emission of the lesion.

Table 3: Effect of Intervention on Presenting Symptoms During Follow-Up

Symptoms	Symptoms Progression Over 45 Days		
	15/6/2024 to 30/6/2024 (Day 1 – 15)	1/7/2024 to 15/7/2024 (Day 16 – 30)	16/7/2024 to 31/7/2024 (Day 31 – 45)
Kandu (Itching)	+++	++	0
Utsannata (Elevated circular lesions)	++	+	0
Visarpini (Spreading)	+++	++	0
Raukshata (Dryness)	+++	++	0
Mandala (Circular Patches)	++	+	0
Raga (Erythema)	++	+	0
Pidika (Papules)	++	+	0

Note: Assessment criteria evaluated as 0 = Absence of Symptoms; + = Mild (symptom present but easily tolerated, does not affect daily activity); ++ = Moderate (symptom causes frequent discomfort, moderately affects daily activity); +++ = Severe (symptom is continuous and intense, significantly affects daily activity and sleep)

Discussion

Dadru Kushtha is a type of *Kshudra Kushtha* and involves the vitiation of *Pitta-Kapha Doshas* and *Dushti* of *Rasa* and *Raktavaha Srotas*. The major *Lakshanas* (symptoms) include *Kandu* (itching), *Utsannata* (elevated circular lesions), *Mandala* (Circular Patches), *Raga* (Erythema), *Raukshata* (Dryness), and *Pidika* (Papules).(2)

Property and Effect of *Shuddha Tankana Bhasma*

The chemical composition of *Tankana* is Sodium Tetraborate ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$). It is a transparent, colourless, odourless and tasteless crystalline powder. It is saline and alkaline in nature. It effloresces in dry air and on ignition, loses all its water of crystallisation.(3) According to *Acharya Charaka*, *Dadru Kushtha* is classified as a *Pitta-Kaphaja Vyadhi*.(4) while *Acharya Sushruta* describes it as a *Kaphaja Vyadhi*.(5) The properties of *Shuddha Tankana*, specifically its *Rasa* (taste), *Guna* (qualities), *Veerya* (potency), and *Vipaka*, include *Katu* (pungent), *Ruksha* (dry), *Tikshna* (sharp), and *Ushna* (hot), respectively, which primarily address the *Kapha Dosha*.(6) The *Ruksha Guna* of *Shuddha Tankana* helps alleviate the *Klinnata* caused by *Kapha* and *Pitta Dosha* in *Dadru Kushtha*.

An experimental study on *Shuddha Tankana Bhasma* carried out at the Department of Microbiology in Dr. G.C. Negi College of Animal and Veterinary Sciences, Palampur and Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya, Palampur, demonstrated 100% inhibition effect against the isolated strain of dermatophyte in vitro study and was found clinically effective in the treatment of onychomycosis. An experimental study was conducted on *Shuddha Tankana* and *Dadruhara Malahara Yoga* with positive control of Miconazole. *Shuddha Tankana* (Purified Sodium Tetraborate) showed 100%

zone of inhibition against *Trichophyton mentagrophyte* equivalent to Miconazole nitrate and was found clinically effective in the treatment of onychomycosis.(7)

Method of Preparation of *Tankana* Cream and its Probable Mode of Action

According to *Rasatarangini*, the coarse powder of raw *Tankana* is first made into powder form, then taken into a heated iron pot and stirred till it becomes light and puffed after dehydration.(8) A similar method of purification is explained in *Ayurveda Prakasha* and *Rasa Jalanidhi*. It is then collected and powdered, and then sieved through sieve number 125 to make the powder finer. In this way, *Shuddha Tankana Bhasma* is prepared. To make *Tankana* cream, an equal quantity of *Shuddha Tankana Bhasma* was mixed with an equal quantity of Light Liquid Paraffin and one-fourth quantity of Microcrystalline wax with the help of an End Runner Mill.

When cream or *Lepa* is applied to the skin using an appropriate base, the active principles of its ingredients are released into the base. The combination then enters the pilosebaceous units, which include hair follicles and sebaceous glands. The active ingredients are absorbed through the *Swedavahi Srotas* (sweat channels) and *Siramukha* (blood vessels or capillaries in the skin). After cream, i.e., *Lepa*, is absorbed through the skin, it undergoes a process of biotransformation. *Bhrajaka Pitta* is a subtype of *Pitta Dosha*, which functions especially in the skin. According to *Arundatta Pachana* of *Lepana Dravya*, *Abhyanga Dravya*, and so forth, are carried out through *Bhrajaka Pitta*.(9) It initiates the catabolic breakdown of the absorbed material that is referred to as *Pachana* by *Bhrajaka Pitta/Agni*.

Sustainable and Low-Cost Nature of *Tankana*

Sustainability refers to meeting our own needs without compromising the ability of future generations to meet theirs. In the local market, *Tankana* is called *Suhaga*. It scores highly here in terms of sustainability. From an environmental perspective, it is a minimally processed natural mineral. Its production has a lower carbon footprint compared to synthetic drugs, and it is biodegradable, avoiding the issue of pharmaceutical pollution.

A small pack of *Suhaga* (50-100 grams) is available for as little as 20 to 50 rupees in local grocery stores (*Kirana* shops) and chemical suppliers. This one-time purchase can provide treatment for multiple applications lasting over weeks or months. A single tube of a branded antifungal cream can cost anywhere from 100 to 500 rupees and may need to be reapplied multiple times. The cost of a doctor's visiting fees combined with prescribed medication, increases the expense significantly. For common superficial fungal infections, the use of *Suhaga* can provide an effective first line of treatment at home. Its low-cost nature and wide availability make it an economical choice. It is accessible to people across all socio-economic groups, including those in rural and remote areas where access to pharmacies and clinics may be limited.

Limitations of the Study

This case study did not record objective parameters such as measurement of the lesion's diameter, area, or thickness. The assessment was based solely on the subjective parameter of symptom grading (mild/moderate/severe). However, future research should include standardized, reproducible objective measures to strengthen the evidence. Despite this limitation, the complete resolution was verified by a negative KOH mount and absence of scaling at the end of treatment.

Conclusion

This case report highlights the potential of using *Shuddha Tankana Bhasma* as an effective, low-cost, and sustainable Ayurvedic intervention for treating common dermatophytosis like *Dadru Kushtha*. *Tankana* is easily available and has abundant resources in the form of a natural compound called Sodium Borax, which is very cheap. The purification method is also easy.

It is incredibly cost-effective. A small, one-time purchase of *Suhaga* or *Tankana*, costing less than a cup of tea, provides numerous treatments, making it far more economical than recurring purchases of branded antifungal creams. If one feels preparing *Tankana Bhasma* is difficult and time-consuming, then in that case, they can be advised to perform simple *Shuddha Tankana Prakshalana* (washing the affected area solely with *Shuddha Tankana Bhasma* mixed water) at the comfort of their home.

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