Journal of Ayurveda and Integrative Medicine 13 (2022) 100533

Contents lists available at ScienceDirect

Journal of Ayurveda and Integrative Medicine

journal homepage: http://elsevier.com/locate/jaim

Case Report

Management of Psoriatic Erythroderma (PsE) with *Ayurvedic* herbomineral preparations: A case report

K.S. Girhepunje [a, *], Varsha Gupta [b], V.K. Srivastava [c], A.K. Pandey [a], Rajendra Prasad [a], O.P. Singh [a]

[a] *Department. of Kayachikitsa, Faculty of Ayurveda, IMS, BHU, Varanasi, India*
[b] *Department of Rachana Sharir, Faculty of Ayurveda, IMS, BHU, Varanasi, India*
[c] *Department. of Panchakarma, Faculty of Ayurveda, IMS, BHU, Varanasi, India*

ARTICLE INFO

Article history:
Received 28 June 2021
Received in revised form
9 November 2021
Accepted 10 November 2021
Available online 3 January 2022

Keywords:
Erythroderma
Psoriasis
Kushtha
Ayurvedic
Immunomodulation

ABSTRACT

Psoriatic Erythroderma (PsE) is a presentation of Erythroderma due to a history of psoriasis showing inflammation and exfoliation of epidermal skin characterized by erythema and scaling. There is no definite treatment in contemporary medical science but the principle-based *Ayurvedic* approach has been proved to be effective. We present a case of PsE treated for 3 months with *Ayurvedic* herbomineral preparations and dietary restrictions for non-vegetarian and dairy items. As per the *Ayurvedic* diagnostic view, the presented case is correlated with *Audumbara Kushtha* and *Ekakushtha* due to their intricate features. Thus, *Ayurvedic* approaches were directed to eliminate vitiated *doshas* responsible for acute exacerbation of *Kushtha* (~dermatitis) and to maintain equilibrium among them. The patient was initially considered as a case of *Saam* stage of *Kushtha* with *Pitta-Rakta-Vata* predominance. Thus, management was planned into different domains-treatment of *Saam* stage of *Kushtha*, *Vyadhipratyanika chikitsa* (~disease antagonistic treatment), *Rasayana* intervention (~Immunomodulation therapy) and *Ayurvedic* drugs were given accordingly. The assessment was done based on subjective parameters and PASI score. The patient was followed for about one and half year without any complication and relapse. This case study shows PsE can be managed with an *Ayurvedic* approach and proper diet planning.

1. Introduction

Erythroderma is an uncommon exfoliative dermatitis caused by a variety of diseases characterized by generalized erythema and variable degree of scaling [1]. Psoriatic Erythroderma (PsE) is the most common cause responsible for ~25% of all Erythroderma cases [2]. Erythroderma due to psoriasis is a very difficult condition to manage [3]. The clinical features are erythematous pruritic lesions, generalized burning sensation, pain, swelling and gross micaceous scaling from which the patient was mainly suffering were resembling two different types of *Kushtha* i.e., *Audumbara kushtha* and *Ekakushtha* [4]. *Ayurveda* deals PsE as *Kushtha* (~dermatitis) with vitiated *Pitta- Rakta- Vata doshas* predominantly with co-exited heterogeneous features of aforesaid types of *Kushtha*. The patient had a dietary history of additional salt eating with foodstuffs, spicy items and meat (approximately 4–5 times a week) supported *Pitta-pradhan* etiology. In this paper, a case of PsE is treated successfully with *Ayurvedic* herbomineral preparations.

2. Patient information

45 years old male patient visited the Out-Patient Department of Sir Sunderlal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi presenting with fever, erythematous scaly lesions on both lower limbs associated with painful swelling, itching and burning sensation for 10 days. Also, he had exfoliation of epidermal skin with generalized erythema and itching for 15 days. He was suffering from a course of remission and relapses of discoid epidermal scaly lesions on lower limbs for 8 years. He was diagnosed with Psoriasis in 2011. He had a thin and weaker left lower limb affected by Poliomyelitis since childhood. He was non-diabetic and non-hypertensive. He used

* Corresponding author.
E-mail: ks.girhepunje10@bhu.ac.in
Peer review under responsibility of Transdisciplinary University, Bangalore.

https://doi.org/10.1016/j.jaim.2021.11.001

to take a non-vegetarian diet twice a week. He was asked to consult an *Ayurveda* physician due to unmet expected response and recurring relapses on leaving medication. He was treated for 3 months with complete relief.

3. Clinical findings

3.1. General examination

On examination, his physique, general condition and nourishment were moderate with vitals stable. His appetite was average and his sleep was disturbed due to anxiety. He was febrile (38 °C) with blood pressure - 110/74 mmHg, pulse rate - 104/min, respiratory rate - 26/min and weight - 62 kg.

3.2. Dermatological examination (description, distribution and size of the lesions)

Lower limbs: Generalized pruritic, erythematous lesions overlapped with some indurated and hyper-pigmented discoid scaly lesions (2–3.5 cm diameter) also somewhere different sized irregular marginated scaly eruptions (1.5 cm × 4.5 cm) on both lower limbs (Fig. 1).

Upper limbs: Generalized mild pruritic erythema associated with mild linear scaling and multiple tiny papules of variable size (0.5–1 mm diameter) on both upper limbs.

Back: Generalized mild erythema associated with pruritus, linear thin greyish scaly eruptions and mild epidermal exfoliation from lateral back and loin regions.

Front: Presentation of the affected abdominal and thoracic area was quite similar to that of the back region. Mild exfoliation was associated with the lower lateral thoracic region.

Grattage test was positive at lower limbs. Overall presentations were suggesting features of Psoriasis and Erythroderma.

3.3. Other relevant data

Systemic examination didn't reveal any significant findings. Hematological investigations (Table 1) revealed hemoglobin −12.1 gm/dL, platelets- 4.57 lakhs/uL, total leukocyte count- 16,020/uL suggesting superadded possible infection. Hepatitis B and C profiles were negative. The renal profile was normal. Hepatic enzymes were slightly raised with no sign of jaundice. We repeated the blood investigations at each visit considering the safety of the patient till the last visit (Table 1). Hepatic enzymes were raised since 1st visit and remained a little high during the course of management. The patient told that he had done liver function tests many times when taking modern medicines found increased hepatic enzymes with little fluctuations. ALT, AST and ALP found declined on the 6th visit since hepatoprotective medicines were started. He was also been advised for ultrasonography for evaluation of any changes in liver architects. During follow-ups, the patient had no signs and symptoms of hepatitis, jaundice or related clinical feature. So, it was not given much importance considering it as a secondary association to chronic dermatitis.

4. Diagnostic focus and challenges

The patient was diagnosed case of Psoriasis in 2011 by a dermatologist but no records are available. We advised him to reinvestigate autoimmune profile (Anti-Nuclear Antibody, Serum immunoglobulin E, C reactive protein, etc.) and skin biopsy but he refused due to financial problem claiming that he had already done ANA for diagnosis of psoriasis and requested to prescribe medicines. So, he was provisionally diagnosed as Psoriasis with Erythroderma based on clinical features. The further diagnosis was confirmed as PsE after discussion with the dermatology department of Banaras Hindu University (Table 2).

5. Therapeutic intervention

The pharmacological intervention was planned in the form of *Ayurvedic* herbomineral preparations orally and topically along

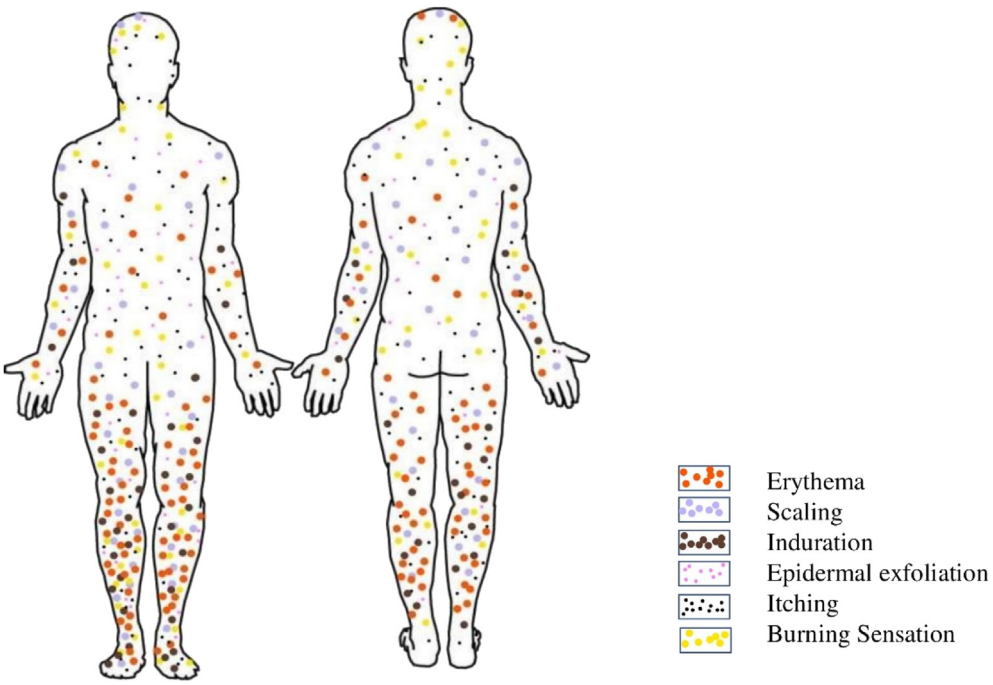

Fig. 1. Lesion distribution in the patient of Psoriatic Erythroderma (PsE).

Table 1
Timeline of the case.

Years	Clinical events and interventions
Dec 2010	The onset of variable degree of discoid erythematous scaly lesions on both lower limbs
Feb 2011	Diagnosed as Psoriasis by a dermatologist at Patna (Bihar) based on clinical features (Anti-nuclear antibody was positive as per patient)
2011	Underwent allopathic medications for 2 years (topical corticosteroids oral Prednisolone) with initial improvement but relapse with exacerbation on leaving medications
2013	The patient was suggested *Ayurveda* consultation
2013	Took oral *Ayurvedic* medications for one year from a local *Ayurveda* physician without any dietary restrictions with mild improvement
2014	Stopped medication and was not under any medical supervision
2015–2017	Took self-medication intermittently from medical store
2018	The onset of mild scaly erythematous eruptions on trunk, abdomen, back and upper limbs along with epidermal exfoliation
23/3/2019 First visit	Visited OPD of *Kayachikitsa* Department, SSH, IMS, BHU, Varanasi, c/o: Fever (+), Erythematous lesions on lower limbs (+++), Erythema on upper limbs and trunk (+), Scaling on lower limbs (+++), Induration of lesions (+++), Generalized epidermal exfoliation (+), Swelling on lower limbs (++), Generalized itching (+++), Burning sensation (+++) and Pain at lower limbs (++), **PASI: 27.7** hematological investigations (CBC: Hb −12.1 gm/dL, platelets- 4.57 lakhs/uL, TLC- 16020/uL and DLC: N-74.7%, L-12.5%, M-6.8%, E−5.9%, B 0.1%, LFT: total bilirubin-0.58 mg/dl, direct bilirubin- 0.24 mg/dl, total protein- 7.13 g/dl, albumin- 3.67 g/dl, ALT- 63.7U/L, AST- 44.3U/L, ALP- 87U/L, RFT: creatinine- 0.71 mg/dl, urea- 17.1 mg/dl, serum electrolytes were within normal limits, RBS: 168 mg/dl, UA-6.2 mg/dl, ESR- 87 mm/h Advised hospitalization
25/3/2019	The patient was admitted to MKC Ward, SSH, IMS, BHU for initial management with a detailed history, clinical examination and confirmation of diagnosis
26/3/2019	Confirmation of clinical diagnosis as Psoriatic Erythroderma (PsE) by Dermatology Department of SSH, IMS, BHU, Varanasi (CBC: Hb −11.7 gm/dL, platelets- 4.77 lakhs/uL, TLC- 9335/uL and DLC: N-63.1%, L-21%, M-8.7%, E−7%, B 0.2%)
27/3/2019	Patient discharged with same medicines
5/4/2019 Second visit	Previous complaints reduced with little effect on erythema, scaling and induration c/o: Erythematous lesions on lower limbs (+++), Scaling on lower limbs (+++), Induration of lesions (+++), Generalized epidermal exfoliation (+), Generalized itching (++), Burning sensation (++) and Pain at lower limbs (+), **PASI: 22.2,** ALT- 96.2 U/L, AST- 70.6 U/L, ALP- 122 U/L
20/4/2019 Third visit	Significant improvement in all clinical features, mild itchy maculopapular small circular lesions at the upper limbs, trunk and lower limbs with raised hepatic enzymes without any sign of jaundice, c/o: Erythematous lesions on lower limbs (++), Scaling on lower limbs (++), Induration of lesions (++), itching (+), Burning sensation (+), **PASI: 11.6,** ALT- 100.7U/L, AST- 58.7 U/L, ALP- 239 U/L
4/5/2019 Fourth visit	Very tiny and minimal macular lesions on upper limbs, trunk and lower limbs, raised hepatic enzymes, c/o: Erythematous lesions on lower limbs (+), Induration of lesions (+), itching (+), **PASI: 2.1,** ALT- 92 U/L, AST- 63 U/L, ALP- 79 U/L
24/5/2019 Fifth visit	Disappearance of all clinical features with minimal raised hepatic enzymes, **PASI: 0**
18/10/2019 Sixth visit	No any signs of Psoriasis or Erythroderma, routine blood investigations were within normal limits with minimal raised hepatic enzymes, **PASI: 0,** ALT- 71.9 U/L, AST- 55 U/L, ALP- 118 U/L
25/1/2020 Seventh visit	No any complaints, Patient on dietary restrictions (Telephonic conversation)
27/8/2021 Eight Visit	Last follow up with no any complaints, Patient on dietary restrictions (Telephonic conversation)
	OPD-Out Patient Department; SSH-Sir Sunderlal Hospital; IMS- Institute Medical Sciences; BHU-Banaras Hindu University; MKC- Male Kayachikitsa Ward; TLC-Total Leukocyte Count; Hb-Hemoglobin; DLC-Differential Leukocyte Count; LFT-Liver Function Test; RFT-Renal Function Test; N-Neutrophil; L-Lymphocyte; E-Eosinophil; M-Monocyte; B-Basophil; ALT-Alanine Aminotransferase; AST-Aspartate Aminotransferase; ALP- Alkaline Phosphatase; RBS-Random Blood Sugar; UA-Uric Acid; ESR-Erythrocyte Sedimentation Rate; PASI-Psoriasis Area and Severity Index

with strict diet planning. Treatment was planned after assessing the stages of vitiated *doshas*. Initially, during the first visit, the patient was suffering from fever, erythema, swelling, itching and burning sensation mainly over lower limbs suggesting vitiation of *Pitta* and *Rakta*. Also, his painful limbs with dry scaling pointed involvement of *Vata*. The initial stage of the disease was considered as *Saam* (~toxic state due to association of Ama) due to the association of presenting cardinal features with some other symptoms like poor appetite, drowsiness, heaviness, weakness and anxiety [5]. The presence of fever and inflammation might be due to infective etiology as per the contemporary medical context. But the infective condition can also be considered under the *Saam* stage due to its broader aspect and various ailments can be managed accordingly based on *Ayurvedic* principles [6]. So, the condition was assessed as *Kushtha* with *Pitta-Rakta-Vata* predominance of *Saam* stage. Thus, the principle adopted was *Tikta Amapachana*

Table 2
Confirmation of Psoriatic Erythroderma (PsE) to rule out possible differential diagnosis.

Differential Diagnosis	Supportive features and tools to accept the diagnosis
Discoid Eczema	The patient had no crusted and exudative plaques so ruled out
Erythema Multiforme (EM)	Absence of bulls eye lesions like a pinkish ring with a dark red crusty center with high-grade fever so ruled out
Lichen Planus (LP)	No presence of polygonal, purple, plane lesions so ruled out
Pityriasis Rosea	Absence of self-limiting annular lesions in 6–10 weeks with negative Grattage and Auspitz tests in a patient; so, ruled out
Lower Limb Cellulitis	The patient had an intermittent fever for 10 days but an absence of rapidly spreading glossy linear inflamed skin, instead he had scaly lesions with chronic history so ruled out
Toxic Epidermal Necrolysis (TEN)	No clinical presentation of a life-threatening bulbous detachment of epidermis and mucous membrane with widespread erythema and necrosis hence ruled out
Psoriatic Erythroderma (PsE)	-H/o previously diagnosed as 'Psoriasis' and treated with topical corticosteroids and oral prednisolone with a positive response at an initial course of disease for 2 years and aggravation of symptoms on withdrawal of prednisolone -H/o remission and relapses of discoid, scaly, indurated plaques for 8 years with possibly positive ANA suggests past H/o-Chronic Psoriasis -Generalized epidermal exfoliation, generalized erythema and scaling for 10 days associated with past Psoriatic lesions suggest secondary Erythroderma - Clinically positive Grattage test at lower limbs confirms the diagnosis of 'Psoriatic Erythroderma' H/O- history of; ANA-Anti Nuclear Antibody

(~Metabolism of toxic Ama with bitter medicines) with *Vatanulomana* (~reducing morbid *Vata dosha*) primarily until fever with other symptoms subsides. The whole treatment strategy was planned into three domains which are elicited below along with diet planning throughout the course of treatment. In diet planning, he was advised strictly to avoid milk products, a non-vegetarian diet and spicy food.

5.1. Treatment of Saam stage of Kushtha

In this domain, *Panchapaniya* decoction with *Panchanimba churna* (*Tikta Amapachana* (~Metabolism of toxic Ama with bitter medicines)) for *Pitta- Rakta shamana* (~alleviation of Pitta-Rakta doshas) and *Triphala churna* (for *Vatanulomana (~reducing morbid Vata dosha)*) were the main drugs of choice with some supportive drugs for initial management (Table 3). *Panchanimba Churna* is *ushna virya* (~hot in potency) drug and is used for *Amapachana* (~Metabolism of toxins i.e. Ama) and all the types of *Kushtha* [7]. But while dealing with *Pitta* and *Rakta-Pradhan* disease, one has to be cautious about *Pitta vriddhi* (~elevation of pitta) due to *Ushna guna* (~hotness in characteristic). Thus, *Chandanadi vati* was used to counter aggravation of *Ushna guna* of *P. churna*. Also, it is a *Tikta rasa pradhan* (~predominantly bitter in taste) formulation and helps for *Amapachana* and improves *Agnimandya* (~Anorexia) which was practically observed in the patient. It was also given as a supportive medicine to inhibit acute inflammatory conditions of painful lower limbs and burning sensation.

Punarnava Mandoora [7] is a very effective haematinic and anti-inflammatory drug indicated in *Pandu, Udararog, Jwara, Shotha, Krimi, Kushtha*, etc [8]. It helps in *Ras* and *Rakta dhatu shuddhi* (~cleansing of Ras and Rakta dhatu) and improves their proper circulation. That helps in strengthening cardiac functioning which indirectly helps in relieving weakness and anxiety as the heart is also a seat of the mind. It reduces the edema by expelling accumulated extracellular fluid and ameliorates appetite by improving hepatic activity. Thus, considering the multitarget benefits, the use of these drugs simultaneously may help symbiotically rather than encountering desired effects in the presented case.

5.2. Vyadhipratyanika Chikitsa (disease antagonistic treatment)

Fever and swelling reduced in one week so *Panchapaniya* decoction and *Punarnava Mandoora* were discontinued at the second visit. After *Amapachana*, *Shodhana* (~bio-detoxification) would be a choice of further management due to the extensive features of PsE. But the patient was not willing for *Shodhana* therapy even after counseling. Thus, looking at his *Alpa Satva*, it was not adopted in the management. In this domain, *P. churna* continued as a *Vyadhipratyankika* (~disease antagonistic) drug against PsE along with supportive *Gandhaka rasayana*. Also, considering elevated levels of hepatic enzymes *Arogyavardhini vati* was added because of its *Sarvarogahara* (~multi target) property. *Siddharthaka lepa* and Lippu oil were also given as *Vyadhipratyanika* drugs for external application separately once a day (Table 3). Semisolid *S. lepa* was prepared by mixing its dry powder with hot water to apply on the affected body area allowing it for a half-hour before bath. Lippu oil was advised to apply on the same dry affected area after bath.

During the third visit, *C. vati* was stopped as the patient had no burning sensation. This time, *A. vati*, *G. rasayana* were replaced by *Tamalakyadi* syrup, *Bhringaraja ghana vati*, tablet Livomyn due to unsatisfactory results on raised hepatic enzymes and *Chopchini churna* for supportive *Raktaprasadana karma* (~blood purification). *Tamalaki, Bhringaraja* and Livomyn are proved to be hepatoprotective and hence administered to enhance therapeutic action [9].

On the fourth visit, improvement in all the clinical features was observed and a miniscule decline in hepatic enzymes levels was observed in addition but minimal improvement was observed in tiny pruritic lesions. This was an indication of starting external *Lekhana karma* (*~scrapping property*). Thus, *Tankan bhasma* (Borax) being *Kshara* was added in very little quantity for a mild form of external scrapping along with *Mahamarichyadi* oil. Also, D-psora lotion containing ingredients of *S. lepa was prescribed for external application*. Required quantity of *Mahamarichyadi* oil was advised to apply mixing with *Tankan Bhasma* (with ratio 5 ml oil: 1 pinch of *T. bhasma*) at morning whereas D-psora lotion at night separately. Quantity of *lepa*, oil and lotion were advised as per the requirement of the affected area.

5.3. Rasayana (Immunomodulation therapy)

On the fifth visit, the patient had no clinical features of PsE so he was advised to continue only two medications *P. churna* and *Guduchi* for a month along with the advised diet.

6. Follow up and outcomes

The patient had improvement at each follow-up. The fever subsided within 2 days of medication. Total leukocyte count came to the normal range after 3 days of blood investigation. Pain, swelling and burning sensation of lower limb reduced significantly within one week. Erythematous scaly pruritic lesions showed delayed response but completely subsided within 2 months. The assessment was done based on the overall Psoriasis Area Severity Index (PASI) [10] and photographic images (Figs. 2 and 3). Graphical representation is shown to compare treatment effect in overall lesion score, a total area involved score and PASI (Fig. 4). CBC and RFT were normal at each follow-up with slightly raised hepatic enzymes without any complaints or any sign of jaundice. Hepatic enzymes were slightly elevated since the first visit and didn't respond well to medication till the third visit. But after little modification in the treatment during the third visit, the elevated hepatic enzyme levels started declining accompanied by a feeling of wellbeing as per patient's reporting (Table 1). He was advised to continue medications for one month even after relief in all symptoms. He discontinued medications at the end of June 2019 and visited OPD in October 2019 without any complaints (sixth visit). Furthermore, the last virtual follow up (telephonic conversation) was noted on 27/8/2021. The patient had no complaint of PsE at the time of the last virtual follow-up. He was advised to follow dietary instructions and not to consume milk products and a non-vegetarian foods for one year.

7. Discussion

7.1. Strength of the case

PsE is difficult to manage due to relapsing events and modern medicines don't assure complete remedy (Singh GK et al.) but was successfully treated in 3 months with *Ayurvedic* approach that showed significant improvement without any complication and relapse (15 months). Psoriasis, PsE and other autoimmune dermatosis get worsen with immunosuppressive therapies with the time practiced in the contemporary medical science due to increased risk of comorbidities and immunosenescence in elderly patients [11]. Adalimumab and Infliximab are the TNF-α blockers which are used in the management of autoimmune diseases including psoriasis. But in some studies, they have been demonstrated to increase the risk of tuberculosis [12], granulomatous diseases [13] and malignancies [14]. Similarly ustekinumab have been implicated to increase

Table 3
Ayurvedic drugs given at each visit.

Drugs	Main Ingredients	Dose	MoA	Advice
1st **visit: Day 1 to 13; Main drugs**				
Panchapaniya Kashayam (decoction)	*Cyperus rotundus*, *Fumaria indica*, *Vetiveria zizaniodes*, *Santalum album*, *Pavonia odorata*	40 ml BD	PO BF	
Panchanimba churna	*Panchanga* (roots, leaves, fruits, flowers, barks) of *Azadirachta indica,* processed ash of Fe,	3 gm BD	PO AF	LWW
Triphala churna (fine powder)	Emblica officinalis, Terminalia bellerica, *Terminalia chebula*	5 gm HS	PO AF	LWW
Supportive drugs				
Chandanadi vati (tablet)	*Santalum album*	500 mg BD	PO AF	LWW
Punarnava Mandoora (tablet)	*incinerated red oxide of Fe, cow urine, Boerhavia diffusa*	500 mg TDS	PO AF	LWW
Giloy Water for drinking	*Tinospora cordifolia*	5 cm long stem: 1 L water	SOS	
2nd **visit: Day 14 to 28; Main drugs**				
Panchanimba churna (fine powder)		3 gm BD	PO AF	LWW
Arogyavardhini vati (tablet)	Purified & Processed Hg, S, Fe, Mica, Cu	500 mg TDS	PO AF	LWW
Triphala churna (fine powder)		5 gm HS	PO AF	LWW
Supportive drugs				
Chandanadi vati (tablet)		500 mg BD	PO AF	
Cap. Amrita DS	*Tinospora cardifolia*	800 mg BD	PO AF	LWW
Gandhaka Rasayana (tablet)	Purified & Processed S	500 mg TDS	PO AF	LWW
Siddharthaka lepa	*Cyperus rotundus, Randia dumetorum, Triphala, Pongamia pinnata*,etc.		LA BB	HW
Lippu oil	*Pongamia pinnata, Cocos nucifera oil*		LA AB	
3rd **visit: Day 29 to 42; Main drugs**				
Chopchini churna (fine powder)	*Smilax china*	3 gm BD	PO AF	LWW
Panchanimba churna (fine powder)		3 gm BD	PO AF	LWW
Supportive drugs				
Syp. *Tamalkyadi*	*Phyllanthus niruri*	20 ml BD	PO AF	LWW
Bhringaraja ghana vati (tablet)	*Eclipta alba*	500 mg BD	PO AF	LWW
Tab. Livomyn	*Phyllanthus niruri,Triphala*, *Tecomella undulata*, *Boerhavia diffusa*	500 mg BD	PO AF	LWW
Lippu oil			LA AB	
4th **visit: Day 43 to 62; Main drugs**				
Panchanimba churna		3 gm BD	PO AF	LWW
Cap. Amrita DS		800 mg BD	PO AF	LWW
Mahamarichyadi oil with *Tankan bhasma* (fine powder)	*Piper nigrum*, *Operculina terpethum*, As_2S_3 As_2S_2, Cow dung juice, Cow urine, *Aconitum ferox*, Mustard oil, etc	5 ml: 1 pinch ratio	LA at daytime	
Supportive drugs				
Tab. Livomyn		500 mg BD	PO AF	LWW
Triphala churna (fine powder)		5 gm HS	PO AF	LWW
D- Psora lotion	Purified S, *Holarrhena antidysenterica, Cassia fistula*, *Siddharthaka Lepa*,etc		LA at night	
5th **visit: Day 63 to 90; Main drugs**				
Panchanimba churna (fine powder)		3 gm BD	PO AF	LWW
Cap. Amrita DS		800 mg BD	PO AF	LWW
BD- Twice a day	As_2S_3-Arsenic Trisulfide; As_2S_2- Arsenic disulfide Hg-Mercury; S-Sulphur; Fe-Iron; Cu-Copper	LWW- Luke Warm Water		
TDS-Thrice a day	MoA- Method of Administration	HW- Hot Water		
HS-At bedtime	PO-Per Oral			
	BF-Before Food			
	AF-After Food			
	LA-BB-Local Application Before Bath			
	LA-AB-Local Application After Bath			

dangerous cardiovascular events [15]. Many times, patients remain unaware of the complications after the use of such systemic immunosuppressive agents for many years and their rebound effects after withdrawal. Though such treatment modalities are advocated in moderate to severe autoimmune dermatoses and are quite effective to mitigate clinical symptoms in a short period, the risk of complications is always there.

7.2. Limitations with this case

During the course of treatment, multiple *Ayurvedic* formulations were prescribed for external as well as internal administration. Hence, it's difficult to assess the qualitative and quantitative effectiveness of each formulation separately. Also, it's quite difficult to correlate each principle of *Ayurveda* with contemporary medical science for scientific validation.

7.3. Rationality of the treatment

The present case of PsE associated with fever and swelling can be correlated with the *Saam* stage of *Pitta-Rakta-Vata* predominant *Kushtha* [5,6]. It was managed up to 3 months by dividing complete treatment into three different domains depending on the *Avastha* (stage) and the response of the *Vyadhi* to the medication, viz-a) Treatment of *Saam* stage of *Kushtha* b) *Vyadhipratyanika chikitsa* and c) *Rasayana* intervention.

7.3.1. Stage 1

As mentioned before that *Panchapaniya* decoction and *P. churna* were given as *Tikta Amapachana* with *Doshapratyanika chikitsa* (*~Dosha antagonistic treatment*). In both, the formulations, *Tikta* (~bitter) is the dominant rasa, which exhibits various *Ayurvedic* pharmacodynamic activities such as *Pitta shamana* (~inhibition of

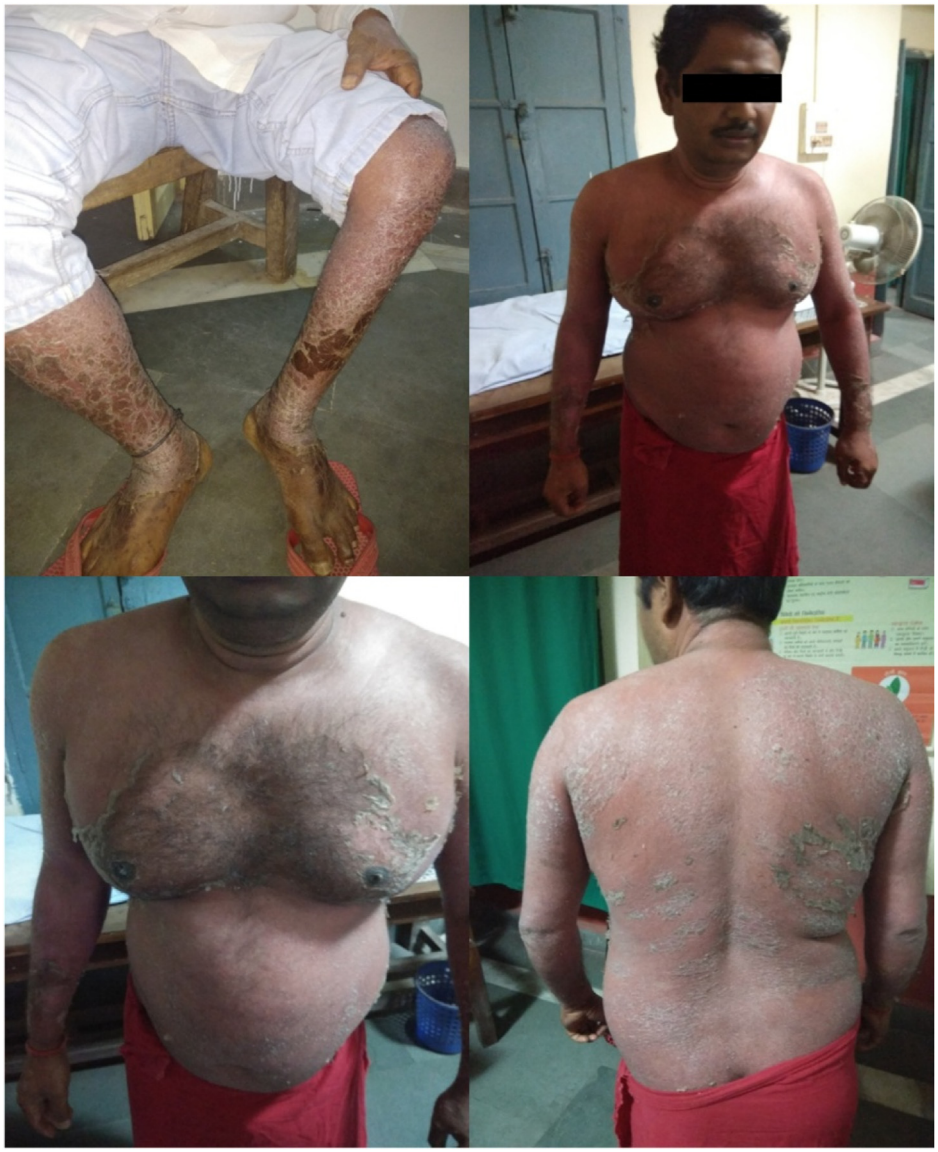

Fig. 2. Psoriatic Erythroderma (PsE) patient before treatment.

elevated *Pitta*), *Raktaprasadana* (~blood purifying) and *Amapachana* (~metabolization of toxins i.e. *Ama*) leading to *Jwarnashana* (~antipyretic) and *Kushthanashana* (~Anti dermatitis) effect [4,16]. Thus, regarding initiation of treatment strategy, *Panchapaniya* decoction (~*Shadangpaniya* devoid of *Shunthi*) and *P. churna* were the choices at the first visit. Little modified *Shadangpaniya* which is indicated in febrile illness (named as *Panchapaniya* decoction-Table 3) was administered due to dominance of *Pitta-Rakta* in this case along with *P. churna*, which is advocated in all types of *Kushtha* [17]. As the patient was suffering from the scaling and exfoliation of the epidermal skin, which is suggesting the involvement of vitiated *V. dosha*. Thus, *T. churna* (Table 3) being *Anulomaka* was given for *Vatanulomana* (~reducing morbid *V. dosha*) [18].

7.3.2. Stage 2

During the second visit, *A. vati* and *G. rasayana* were prescribed as a part of *V. chikitsa*. It can also be considered under *Antah-parimarjana* (internal cleansing therapy) and external application of *S. lepa* and Lippu oil under *Bahirparimarjana chikitsa* (external cleansing therapy) for balancing the doshas [16]. PsE was associated with elevated hepatic enzymes (Table 1) since the first visit but there were no features of jaundice or hepatitis on clinical evaluation. Though we didn't find clinically, continuously elevated hepatic enzymes led it to be considered as an associated *Yakrit vikara* (hepatic disorder). *Arogyavardhini* is a proven hepatoprotective drug used in *Kushtha* which slowly expels Malas (~toxins) stuck at the alimentary canal and cellular level deeply in the body thus prescribed [7,19]. *G. rasayana* works mainly on *R. dhatu* and skin irrespective of their vitiation causes [7]. In the case of various chronic skin diseases, it detoxifies the Rasa-*Raktadi saptadhatus* by separating deeply seated *doshas* stuck with *dhatus* and transforming them into purified form. On external application, *S. lepa* helps in the restoration of the normal functioning of epidermal skin by inducing exfoliation of dead skin from an affected area. Therefore, ultimately it helps in the upregulation of *Rasavaha srotasa* (~dermatological channels) [7]. On the other hand, Lippu oil inhibits the growth of various bacterial colonies (such as Staphylococcal aureus, *Staphylococcus epidermidis*, Staphylococcus pyogenes, *Escherichia coli*, etc.) generally remain high in an eczematous and infected skin wound. *Karanja* (*Pongamia pinnata*) is

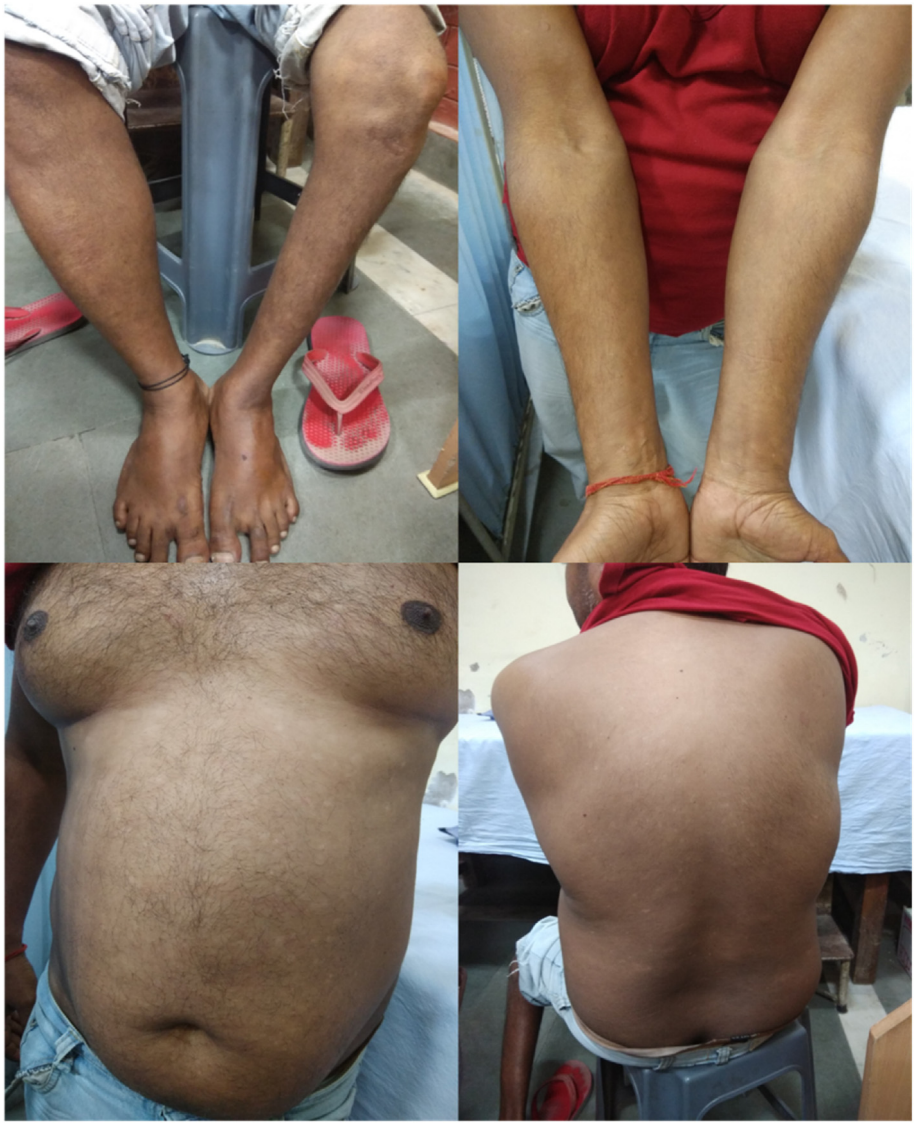

Fig. 3. Psoriatic Erythroderma (PsE) patient after treatment.

the content of Lippu oil, which possesses proven antimicrobial activity [20]. Lippu oil does not cause any irritation instead it is soothing to the skin when used topically perhaps due to *Madhura rasa-Sheeta virya* of coconut oil along with it possess *Vranaropaka* (wound healing) property [21]. The patient confirmed the experience of exfoliation after *S. lepa* and softening of the skin after Lippu oil he further added.

At the third visit, it was observed that the patient responded well but pruritic lesions didn't show desired response with previous medication. Also, hepatic enzymes were tending to elevate (Table 1) made us rethink the use of *A. vati*. Thereafter, *Bhringaraja ghan vati*, *Tamalakyadi* syrup and Livomyn were added for better hepatoprotective effect [9] along with Smilex china (*Chopchini*) for *R. karma*, the expected positive responses were noted during the fourth visit. *Rakta dushti* is one of the main culprits responsible for the hepatic disorders being *Moolsthana* (~route of origin) of *Raktavaha srotasa* as well as various dermatological disorders. Smilex china (*Chopchini*) is accounted to work effectively on the aforesaid principle of the *Raktaprasadana* and thus beneficial in both conditions [21]. Sometimes, when *Raktaprasadana* does not show the desired effect on chronic pruritic and indurated dermatological lesions, the requisite for external *Lekhana* karma may be helpful. In this case, a little quantity of *T. bhasma* was added in *Mahamarichyadi* oil for better external *L. karma* that further showed better results.

7.3.3. Stage 3

Long-term administration of immunomodulatory drugs (*Rasayana* category) plays a vital role in preventing the relapse of PsE and similar ailments. Hence, *Guduchi* was prescribed as a *Rasayana* drug, which is a proven immunomodulator with hepatoprotective potential. Initially, during the first visit, it was prescribed in very low potency in *Guduchi* water form and later in the form of capsule Amrita DS. It aids in improving immunomodulation and augments liver function.

7.3.4. Dietary modifications

While considering the cause of PsE, no importance is usually given to faulty dietary habits in modern medicine. It is one of the major factors associated with autoimmune dermatological problems mentioned in *Ayurvedic* classics. Diet has a very important role in aggravating skin disorders [22,23]. It seems that recurrence of

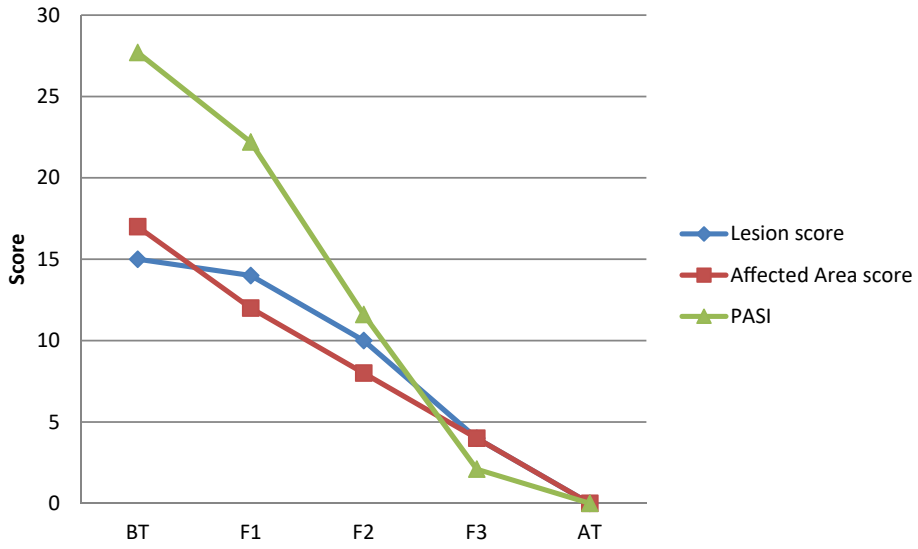

Fig. 4. Effect of ayurvedic treatment on Psoriatic Erythroderma (PsE).

PsE remains frequent without dietary planning despite the *Ayurvedic* management. An observational study over 1206 psoriasis patients by Ladan Afifi et al. found that 50% cases after removal of junk food, 47.7% with the removal of dairy products and 30.4% cases after removal of meat showed improvement in psoriasis [24]. *Kushtha* is categorized under *Santarpanajanya vyadhi* in *Ayurveda* [16]. Junk food items, meat, dairy products, etc. posses certain *gunas* (properties) such as *Snigdha* (unctuousness), *Guru* (heavy to digest), *Picchila* (sliminess) [16]. Thus, they are *santarpaka* (~body nourishing) in nature that might be contributing factors to aggravation of the PsE. Thus, while treating chronic dermatological ailments, it would be beneficial if they are restricted during the course of management.

The presented case showed no relapse in 15 months after discontinuing medications and no side effects noted during this period.

8. Conclusion

Presented case is proficiently treated departing maximum possible causative factors would be a clue for the alternative option. Principle-based customized *Ayurvedic* management is indubitably potential and may provide futuristic directions for managing PsE and some other likewise disorders decisively. Autoimmune dermatosis like PsE, psoriasis, etc. can be managed better with a customized *Ayurvedic* approach along with appropriate dietary planning. Requisition for related clinical studies is warranted for composite use of *Ayurvedic* formulations in such types of dermatological conditions. The combined effect of *Ayurvedic* preparations along with dietary protocol seems more effective in the management of PsE. Further studies are needed to evaluate the role of diet and given *Ayurvedic* formulations in the management for a better understanding of PsE.

Patient perspective

The patient reported that he never witnessed such promising results before compared to current treatment. His erythematous lesions vanished completely without any relapse or any side effect. He was feeling quite confident and much relaxed as well after treatment with *Ayurvedic* medication.

Patient consent

Written consent was obtained from the patient for publication of this case.

Source of funding

None.

Conflict of interest

None.

Author Contributions

K.S. Girhepunje: Conceptualization, Methodology, Writing- Original draft preparation; **Varsha Gupta:** Writing- Initial draft preparation, Visualization; **V.K. Srivastava:** Investigation; **A.K. Pandey:** Editing; **Rajendra Prasad:** Writing- Reviewing; **O.P. Singh:** Supervision.

Acknowledgements

We are thankful to teachers and senior residents, Department of Dermatology, SSH, IMS, BHU who helped in diagnosis of the case. Furthermore, we are also thankful to Dr. Guruprasad C Nille, Assistant Professor, Department of Rasashastra & Bhaishajya Kalpana, IMS, BHU for helping in revising manuscript.

References

[1] César A, Cruz M, Mota A, Azevedo F. Erythroderma. A clinical and etiological study of 103 patients. J Dermatol Sci 2016;10(1):1–9. https://doi.org/10.3315/jdcr.2016.1222.
[2] Singh RK, Lee KM, Ucmak D. Erythrodermic psoriasis: pathophysiology and current treatment perspectives. Psoriasis (Auckl) 2016;6:93–104. https://doi.org/10.2147/PTT.S101232.
[3] Singh GK, Chatterjee M. Psoriatic erythroderma and hypothalamus-pituitary axis suppression due to misuse of systemic steroid: two challenging cases. Indian J Dermatol 2015;60(2):194–7. https://doi.org/10.4103/0019-5154.152529.
[4] Shukla V, Tripathi R, editors. Charak Samhita of Agnivesha, Chikitsasthana. 1st ed., vol. 2; 2009. p. 183. Delhi: Chaukhamba Sanskrit Pratisthan.

[5] Tripathi B, editor. Ashtanga Hridayam of Shrimadvagbhata, Sootra sthana; Doshopakramaniya Adhyay. 1st ed. Delhi: Chaukhamba Sanskrit Pratisthan; 2007. p. 188 [Chapter 13], Verse 23-27.
[6] Manohar PR. Critical review and validation of the concept of Āma. Ancient Sci Life 2012;32(2):67–8. https://doi.org/10.4103/0257-7941.118524.
[7] Singh TN. Rasatantrasaar & Siddhaprayog Sangraha part-1 (Hindi). 27th ed. Ajmer: Krishna Gopal Ayurved Bhawan; 2017. p.225, 250,258, 266.
[8] Pandya MG, Dave AR. A clinical study of Punarnava Mandura in the management of Pandu Roga in old age (geriatric anemia). Ayu 2014;35(3):252–60. https://doi.org/10.4103/0974-8520.153735.
[9] Satheesh Naik K, Gurushanthaiah M, Kavimani M, Prabhu K, Lokanadham S. Hepatoprotective role of Eclipta alba against high fatty diet treated experimental models - a histopathological study. Maedica (Buchar) 2018;13(3):217–22. https://doi.org/10.26574/maedica.2018.13.3.217.
[10] Marks R, Barton SP, Shuttleworth D, Finlay AY. Assessment of disease progress in psoriasis. Arch Dermatol 1989;125(2):235–40. https://doi.org/10.1001/archderm.1989.01670140087017.
[11] Wong JW, Koo JY. The safety of systemic treatments that can be used for geriatric psoriasis patients: a review. Dermatol Res Pract 2012;2012:367475. https://doi.org/10.1155/2012/367475.
[12] Solovic I, Sester M, Gomez-Reino JJ. The risk of tuberculosis related to tumour necrosis factor antagonist therapies: a TBNET consensus statement. Eur Respir J 2010;36(5):1185–206.
[13] Wallis RS. Biologics and infections: lessons from tumor necrosis factor blocking agents. Infect Dis Clin 2011;25:895–910.
[14] Okada SK, Siegel JN. Risk of serious infections and malignancies with anti-TNF antibody therapy in rheumatoid arthritis. JAMA, J Am Med Assoc 2006;296(18):2201–2.
[15] Reich K, Langley RG, Lebwohl M. Cardiovascular safety of ustekinumab in patients with moderate to severe psoriasis: results of integrated analyses of data from phase II and III clinical studies. Br J Dermatol 2011;164(4):862–72.
[16] Shukla V, Tripathi R, editors. Charak Samhita of Agnivesha. Sootrasthana; Santarpaniya Adhyay. 1st ed., vol. 1. Delhi: Chaukhamba Sanskrit Pratisthan; 2009. p. 317 [Chapter 23], Verse 3.
[17] Shastri R, editor. Bhaishajyaratnavali of Shri Govind Das, Kushtharog chikitsa. 1st ed. Varanasi: Chaukhamba Prakashan; 2019. p. 892 [Chapter 28], Verse 76-79.
[18] Peterson CT, Denniston K, Chopra D. Therapeutic uses of Triphala in ayurvedic medicine. J Alternative Compl Med 2017;23(8):607–14. https://doi.org/10.1089/acm.2017.0083.
[19] Sapkota YR, Bedarkar P, Nariya MB, Prajapati PK. Hepatoprotective evaluation of Arogyavardhini Rasa against paracetamol-induced liver damage in rats. BLDE Univ J Health Sci 2017;2:44–9.
[20] Dwivedi D, Dwivedi M, Malviya S, Singh V. Evaluation of wound healing, antimicrobial and antioxidant potential of *Pongamia pinnata* in wistar rats. J Tradit Complement Med 2016;7(1):79–85. https://doi.org/10.1016/j.jtcme.2015.12.002.
[21] Sharma PV. Dravyaguna Vigyan. 1st ed., vol. 2. Varanasi: Chaukhamba Bharati Academy; 2009. p.118, 802.
[22] Barrea L, Balato N, Di Somma C. Nutrition and psoriasis: is there any association between the severity of the disease and adherence to the Mediterranean diet? J Transl Med 2015;13:18. https://doi.org/10.1186/s12967-014-0372-1.
[23] Katta R, Desai SP. Diet and dermatology: the role of dietary intervention in skin disease. J Clin Aesthet Dermatol 2014;7(7):46–51.
[24] Afifi L, Danesh MJ, Lee KM. Dietary behaviors in psoriasis: patient-reported outcomes from a U.S. National survey. Dermatol Ther (Heidelb) 2017;7(2):227–42. https://doi.org/10.1007/s13555-017-0183-4.