Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v31i1.4078

NATURAL HERBAL PRODUCTS FOR MANAGEMENT OF DERMATITIS: A REVIEW

Tanvi Patel[1*], Vaidehi Gurjar[2], Dr. Pragnesh Patani[3]

[1*]Student, Khyati College of Pharmacy, Palodia, Ahmedabad.
[2] Assistant Professor, Khyati College of Pharmacy, Palodia, Ahmedabad.
[3] Principal, Khyati College of Pharmacy, Palodia, Ahmedabad.

***Corresponding author**: Tanvi Patel
[*]Student, Khyati College of Pharmacy, Palodia, Ahmedabad pateltanvibalvantbhai@gmail.com

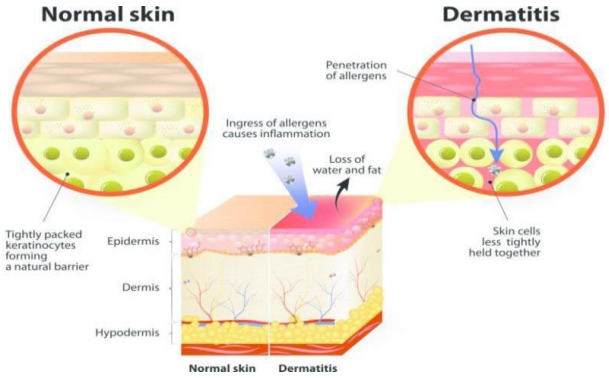
Abstract:
Dermatitis is a skin inflammation characterized by erythema and discomfort. Allergies, irritants, a hyperactive immune system, and heredity cause it. There are four types of dermatitis: contact dermatitis, atopic dermatitis, seborrheic dermatitis, and nummular dermatitis. Contact dermatitis is a rash caused by direct contact with a specific substance, while atopic dermatitis is a persistent, itchy skin disorder-affecting individual with asthma, high fevers, and a family history of these conditions. Seborrheic dermatitis is a chronic condition characterized by scaly, flaky, itchy, and red skin. Nummular dermatitis is a coin-shaped rash and inflammation characterized by small blisters, scabs, and scales. Causes include bacterial or fungal infection, open sores and lesions, Neurodermatitis, permanent darkening or discoloration of the skin, HIVs, and rapid edema swelling. Atopic dermatitis is caused by impaired skin barrier, nervous system imbalance, immune dysfunction, stress, excessive hygiene, environmental pollution, and family history. Seborrheic dermatitis increases excitability of the central nervous system, gastrointestinal tract disease, hormonal disorders, and Hypovitaminosis of vitamin A, vitamin C, and biotin. Dermatitis affects various parts of the body, including hands, elbows, neck, knees, ankles, feet, around the eyes, and scalp. The etiology of dermatitis is the skin's inflammatory response, which can cause erythema, vesicles, pruritus, continuous irritation, scratching, long-term irritation, and thickening of the skin. Treatment involves preventing local irritation, using non-prescription skin lotion, applying cool, wet dressings, and applying anti-pruritics and corticosteroids. Herbal plants used in treating dermatitis include Tulsi, Aloe Vera, and Neem. Tulsi contains fresh and dried leaves of Ocimum sanctum, which contains volatile oil and flavonoids. Aloe Vera is the dried juice collected from the bases of various species of Aloe, which contains crystalline Alvin isomers, and is used to help with skin irritation, sunburn, and inflammation. Neem, consisting of fresh or dried leaves and seed oil, has nimosterol, quercetin, Azadirachata, salanin, meliantrol, meliacin. Neem oil is used in cosmetic products, bulking agents, and special purpose foods for diabetics. In traditional Indian medicine, a neem root decoction is consumed to treat fever.

Key words: Dermatitis, Tulsi, Aloe Vera, Turmeric, Neem

INTRODUCTION

Definition: Dermatitis is the term for skin inflammation that is accompanied by erythema and discomfort.

The term "dermatitis" is used to describe a variety of skin rashes and irritations brought on by several factors, including allergies, irritants, a hyperactive immune system, and heredity. Dermatitis is a combination of the words "derm" for skin and "itis" for inflammation.



Types of dermatitis:

1. Contact dermatitis
2. Atopic dermatitis
3. Seborrheic dermatitis
4. Nummular dermatitis

CONTACT DERMATITIS:

Skin inflammation brought on by direct touch with a specific substance is known as contact dermatitis. The rash is extremely irritating, localized to a small region, and frequently has distinct boundaries.

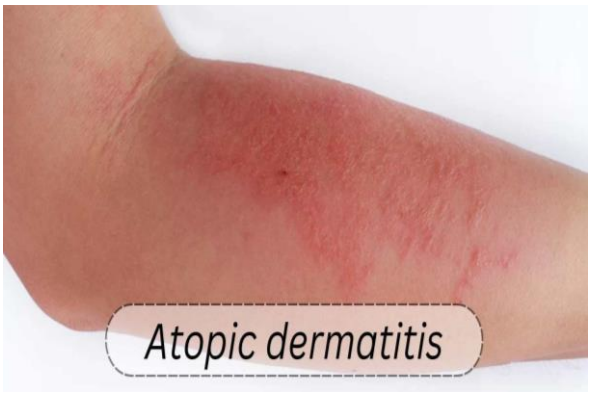
There are two types of contact dermatitis: Allergic contact dermatitis; Irritant contact dermatitis

- **Allergic contact dermatitis:** The immune system of the body reacts to a material coming into touch with the skin to cause allergic contact dermatitis. A T cell-mediated inflammatory skin disease is extremely preventable and brought on by chemical allergens. A person might sometimes become sensitized after just one encounter, while other times sensitization takes place only after numerous exposures to a drug. The following exposure after becoming sensitized results in rashes and itching within 4 to 24 hours.
-

Irritant contact dermatitis: The majority of cases of contact dermatitis (80%) are irritant contact dermatitis, which manifests as more painful than itchy symptoms when a chemical substance directly damages the skin. Acids, alkalis, solvents, potent soaps, and plants are common irritants**.**

ATOPIC DERMATITIS:

Atopic dermatitis is a persistent, itchy skin disorder that frequently affects persons with asthma, high fevers, and those who have a family history of these conditions. Dry skin, pruritus, erythema, edema, scaling, excoriation, leaking, and latensification are some of its characteristics.



1. SEBORRHEIC DEMATITIS:

Skin inflammation known as seborrheic dermatitis frequently affects the face, scalp, and chest. It has a tight connection to diaper rash, also known as infantile seborrheic dermatitis. Seborrheic dermatitis is frequent in those with HIV/AIDS or Parkinson's disease. Skin that is scaly, flaky, itchy, and red is a symptom of seborrheic dermatitis. The condition's symptoms develop gradually, and dandruff-like skin flakes are typically the first indication of seborrheic dermatitis.

NUMMULAR DERMATITIS:

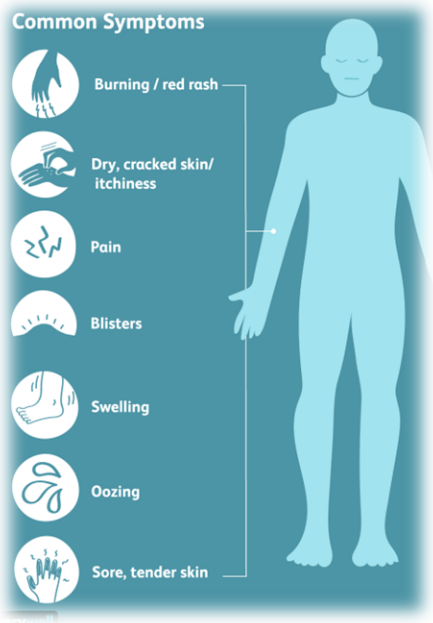
A coin-shaped rash and inflammation known as nummular dermatitis is a chronic condition that is typically irritating and is characterized by small blisters, scabs, and scales. The majority of people gain from moisturizers. Other therapies include oral antibiotics, creams and injections with corticosteroids, and phototherapy. The majority of people gain from skin moisturizers. The use of oral antibiotics, topical and intravenous corticosteroids, and phototherapy are other therapies.

Sign and symptoms:

- Itchiness (pruritus)
- Dry Skin
- Rash on swallow skin that

Varies in the color depending
On your skin color

- Blisters, perhaps with oozing and crusting
- Flaking skin (dandruff)
- Thickened skin
- Erythema
- Hair loss
- Dehydration



Causes

Contact dermatitis:

• Bacterial or fungal infection
• Open sores and lesions
• Neurodermatitis chronic scratching and scaling
• Permanent darking or discoloration of the skin
• HIVs or rapid edema swelling of skin

Atopic dermatitis:

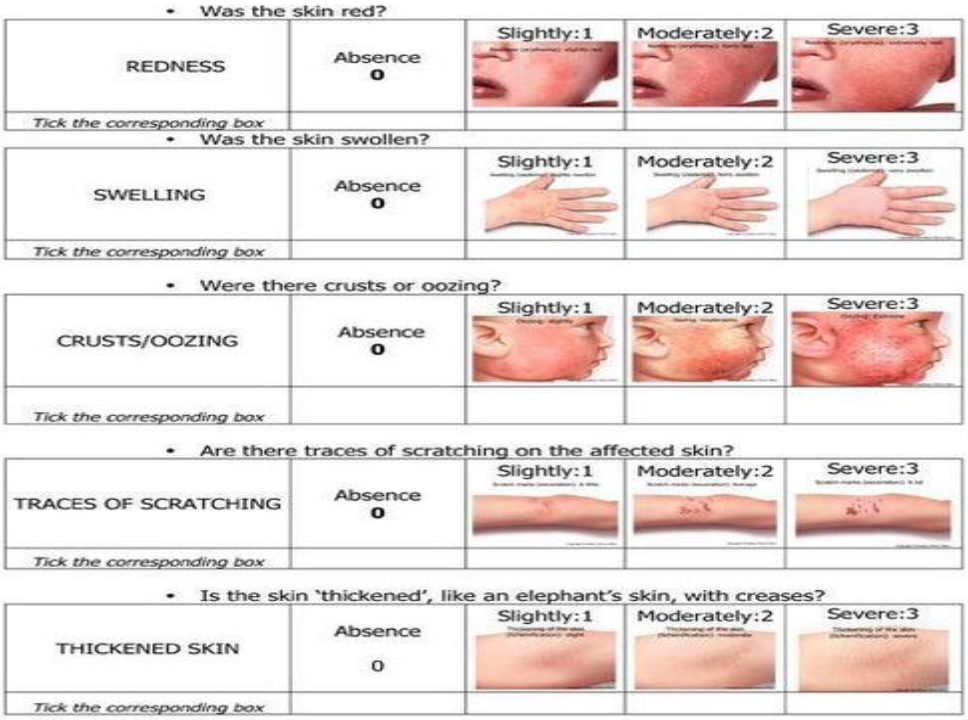
- Impaired skin barrier
- Nervous system imbalance
- Immune dysfunction
- Stress
- Excessive hygiene
- Environmental pollution
- Family history

Seborrheic dermatitis:

- Increase excitability of the central nervous system
- Disease of gastrointestinal tract
- During puberty
- Hormonal disorder
- Hypovitaminosis of vitamin A, vitamin C, biotin

Nummular dermatitis:

- Allergens
- Seasonal changes
- Infection sickness
- Hormonal swings

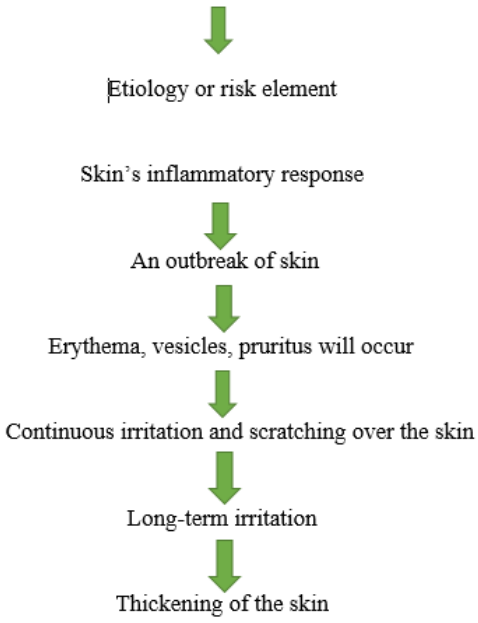


Which part of body does dermatitis affect?

Dermatitis rashes can manifest on any part of the body. It is prevalent on:

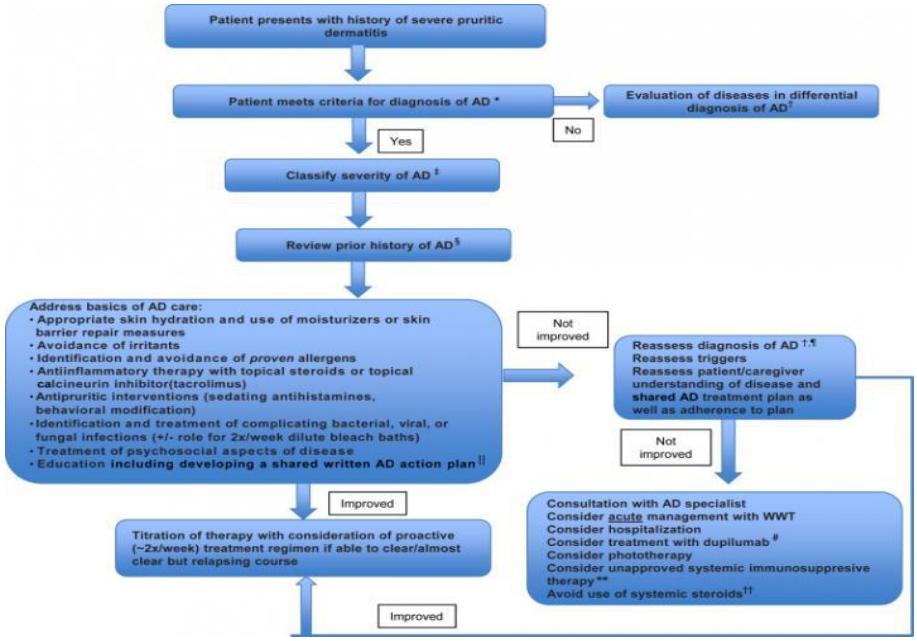
- Hands
- Inner elbows
- Neck
- Knees
- Ankles
- Feet
- Around the eyes
- Scalp

PATHOPHYSIOLOGY



TREATMENT

• Preventing local irritation is advised.
• Refrain from washing the affected region with soap.
• Non-prescription skin lotion Use over the afflicted region.
• A cool, wet dressing ought to be used.
• Anti-pruritics and corticosteroids. Ointments must be applied.



.Herbal Plants used in the Treatment of Dermatitis:

Tulsi

Synonym: Gauri, Bahumanjari, Pavani, Surasa

Biological source: It contains fresh and dried leaves of **Ocimum sanctum**, **Ocimum bassilicum**.
Family: Labiateae

Chemical constituents:

Ocimum sanctum is an upright, heavily branched, fragrant plant that matures to a height of about 30 to 60 cm. Its aromatic leaves are simple, opposite, elliptic, oblong, obtuse or acute with entire or sub serrate or dentate margins, growing up to 5 cm long.

Ocimum sanctum leaves contain 0.7% volatile oil, which is made up of roughly 71% eugenol and 20% methyl eugenol.

Caracole and sesquiterpine hydrocarbon caryophyllene are also present in the oil.

Two flavonoids, Orienting and Antivenin, were extracted from an aqueous leaf extract of Ocimum sanctum.

Uses
Supports healthy skin aging, Soothes skin conditions like eczema.

Aloe Vera

Synonym
Ghritkumari, Musabbar, Aloe

Biological source
Aloe is the dried juice collected by incision, from the bases of the leaves of various species of Aloe. Aloe Perryi Baker, Aloe Vera Linn or Aloe Bardadensis Mil and Aloe Ferox Miller.

Family: Liliaceae

Chemical Constituents:
The three Aloin isomers Barbaloin, and Isobarbaloin, which make up the so-called 'crystalline' Aloin and are found in the medication at concentrations of between 10 and 30%, are the most significant components of aloes. Amorphous Aloin, resin, emodin, and aloe-emodin are other components. Barbaloin is a crystalline glycoside that is present in all species of aloe; it is slightly yellow in colour, bitter, and water-soluble. Isobarbaloin is a crystalline compound that is absent from Socotrine and Zanzibar aloes and just marginally present in Cape aloe. Barbaloin and -Barbaloin are the main ingredients in Zanzibar aloe and Socotrine, respectively.

Uses
- Helps skin with irritation, sunburn, or inflammation.
- This herb is soothing and contains antioxidants, vitamin C, and other minerals.
- To obtain this gel, the leaves can be cut in half along their length and the inner pulp rubbed over the affected area of skin.
- This has an immediate soothing effect on all sorts of burns and other skin problems.

Neem

Synonym
Margosa Azadirachata Indica

Biological source
Neem consists of the fresh or dried leaves and seed oil of Azadirachta Indica J. Juss (Melia Indica or M. Azadirachata Linn.).

Family: Meliaceae

Chemical constituents
It has nimosterol, quercetin, Azadirachata, salanin, meliantrol, and meliacin in its seeds.
Due to the presence of various types of chemicals in different portions of this plant, distinct parts of the plant are employed for therapeutic and commercial purposes. A few of them include:
Leaf: Nimosterol, Quercetin, and Nimbin
Flowers include nimbosterol and kaempferol.
Bark: Nimbosterol, Nimbidin, and Nimbin
Seeds: Vepinin, Azadirachata, Nimbin
Azadirachtin: Offers feedant, hormonal, and repellent characteristics.
The anti-inflammatory, antipyretic, anti-histamine, and antifungal effects of Nimbin.
The antibacterial, anti-ulcer, and anti-fungal activities of nimbidin.
Nimbidol has qualities that are anti-tubercular, anti-protozoa, and anti-pyretic.
Sodium Nimbinate: Offers spermicidal and diuretic effects.
Guanine: Has anti-fungal, anti-malaria, and vasodilator effects.
Quercetin: Has anti-inflammatory, antioxidant, and anti-protozoal effects.

Uses:
• Aids skin that is irritated, burned, or inflamed
• Neem tree parts are used as anthelmintic, antifungals, antibacterial, antivirals, contraceptives, and sedatives.
• Neem oil is used in toothpaste, soap, shampoo, balms, and other cosmetic products.
• Bulking agents and special purpose foods (for diabetics) can be made with neem gum.
• In traditional Indian medicine, a neem root decoction is consumed to treat fever.
• This herb is calming and rich in minerals, vitamin C, and antioxidants.

Turmeric


Synonyms
Saffron Indian; haldi (Hindi); Curcuma; Rhizome cur-Cumae.

Biological Source
Turmeric is the dried rhizome of Curcuma longa Linn.

Family: Zingiberaceae

Chemical Constituents
• Curcuminoids, a yellow colouring agent, account about 5% of the turmeric's weight, while essential oil makes up 6%.

• The volatile oil comprises mono- and sesquiterpine like Zingiberene (25%), -phellandrene, Sabinene, Turmerone, Turmerone, borneol, and cineole.
• The main component of the colouring matter is curcumin I (60%) in addition to tiny quantities of curcumin III, curcumin II, and dihydrocurcumin. Tolylmethyl carbinol is thought to be responsible for the essential oil's choleretic effects. The volatile oil also includes the following compounds: curdione, curzerenone, curlone, AR-curcumenes, -curcumene, -curcumene, camphene, limonene, terpinene, terpinolene, caryophyllene, linalool, isoborneol, camphor, and eugenol. Turmerone, curzerenone, and the like.

Uses
• Scars, skin rashes, burns, and other painful skin diseases have all been treated with turmeric.
• Turmeric is a common domestic medicine for colds and coughs and is used as an aromatic, anti-inflammatory, stomachic, uretic, and anodyne for biliary calculus, stimulant, tonic, carminative, blood purifier, antiperiodic, alterative, spice, and colorant for ointments. It is applied topically as a lotion to enhance complexion. Dyestuff causes the gall bladder to constrict by acting as a cholagogue.
• It can be used to treat menstruation pain. Curcumin is used to treat liver problems because of its choleretic and cholagogue properties.
• Curcumin is a heat-resistant, nontoxic, and pH-sensitive approved color.
• The antichloristic activity of Curcuminoids is a result of the inhibition of leukotriene production.

MANAGEMENT
• Lubricants should be applied to the skin to prevent excessive dryness and cracking.
• Supply IV fluids.
• Allergens ought to be eliminated.
• A moist dressing should be used.
• Encourage drinking fluids orally.
• The patient's proper hydration.
• Lubricant ought to be used.
• Keep up good personal hygiene.
• Start taking corticosteroids and antibiotics.

DIAGNOSIS
• A thorough history should be taken, including information on medication usage, family history of skin conditions, and exposure to allergens.
• To identify allergies, scratch tests and intradermal tests are used.

Conclusion
Treating dermatitis involves applying topical steroids to reduce inflammation, moisturizing the skin, and adhering to a few basic guidelines. Numerous factors determine how different forms of contact dermatitis are classified. It has been accepted that these results do not differentiate between immunological and irritating forms of dermatitis, and that a positive patch test result does not rule out the possibility of either type. Therefore, it is critical to keep in mind that there is frequently overlap in the classification of contact dermatitis kind for instance, irritating contact dermatitis may also be caused by certain immunological mechanisms.

Reference:
1. Brar KK. “A review of contact dermatitis”. *Annals of Allergy, Asthma & Immunology.* 2021 Jan 1;126(1):32-9.
2. Kimber I, Basketter DA, Gerberick GF, Dearman RJ. “Allergic contact dermatitis”. *International immunopharmacology.* 2002 Feb.1;2(2-3):201-11.
3. Bonamonte D, Foti C, Vestita M, Angelini G. “Noneczematous contact dermatitis”. *International Scholarly Research Notices.* 2013;2013.

4. Sasseville D. "Occupational contact dermatitis*". Allergy, Asthma & Clinical Immunology*. 2008 Jun;4:1-7.
5. Slodownik D, Lee A, Nixon R. "Irritant contact dermatitis: a review." *Australasian Journal of Dermatology*. **2008** Jan;49(1):1-1.
6. Wüthrich B. "Clinical aspects, epidemiology, and prognosis of atopic dermatitis". *Annals of Allergy, Asthma & Immunology*.**1999** Nov 1;83(5):464-70.
7. Simpson EL. "Atopic dermatitis: a review of topical treatment options". *Current medical research and opinion*. **2010** Mar 1;26(3):633-40.
8. Shankar DK, Shrestha S. "Relevance of patch testing in patients with nummular dermatitis". *Indian journal of dermatology, venereology and leprology. **2005*** Nov 1;71:406.
9. Gulati R. "atypical manifestation of atopic dermatitis". *Journal of skin and sexually transmitted diseases*. **2021** oct 14;3(2);118-24.
10. Del Rosso JQ. "Adult seborrheic dermatitis: a status report on practical topical management". *The Journal of clinical and aesthetic dermatology*. **2011** May;4(5):32.
11. https://www.drbatras.com/sites/default/files/styles/blog_trending_articles/public/2021-12/Seborrheic-dermatitis-on-head-in-asian-baby.webp?itok=M9-pRvCk
12. Tao R, Li R, Wang R. "Skin microbiome alterations in seborrheic dermatitis and dandruff: a systematic review". *Experimental Dermatology*. **2021** Oct;30(10):1546-53.
13. Yun Y, Kim K, Choi I, Ko SG. "Topical herbal application in the management of atopic dermatitis: a review of animal studies". *Mediators of inflammation*. **2014** Jan 1;2014.
14. https://medicaldialogues.in/h-upload/2023/01/14/198160-atopic-dermatitis.jpg
15. Zari ST, Zari TA. "A review of four common medicinal plants used to treat eczema". **2015** Jun 25;9(24):702-11.
16. Laven RA, Logue DN "Treatment strategies for digital dermatitis for the UK". *The Veterinary Journal*. **2006** Jan 1;171(1):79-88.
17. Goossens A, Aerts O. "Contact allergy to and allergic contact dermatitis from formaldehyde and formaldehyde releasers: a clinical review and update". *Contact dermatitis.* **2022** Jul;87(1):20-7.
18. Wollenberg A, Bieber T. "Atopic dermatitis: from the genes to skin lesions". *Allergy*. **2000** Mar;55(3):205-13.
19. https://i0.wp.com/post.healthline.com/wp-content/uploads/2021/10/Nummular-eczema-coin-shaped-lesions-of-dry-skin-body2.jpg?w=1155&h=1528
20. Sternbach G, Callen JP. "Dermatitis". *Emergency Medicine Clinics of North America*. **1985** Nov 1;3(4):677-92.
21. Adalsteinsson JA, Kaushik S, Muzumdar S, Guttman-Yassky E, Ungar J. "An update on the microbiology, immunology and genetics of seborrheic dermatitis." *Experimental dermatology*. **2020** May;29(5):481-9.
22. Gupta AK, Richardson M, Paquet M. "Systematic review of oral treatments for seborrheic dermatitis". *Journal of the European Academy of Dermatology and Venereology*
23. https://www.google.com/url?sa=i&url=https%3A%2F%2Fsahasa.
24. https://cdn.shopaccino.com/refresh/articles/shutterstock1461590576-445199_l.jpg
25. Gray M, Bliss DZ, Doughty DB, Ermer-Seltun J, Kennedy-Evans KL, Palmer MH. "Incontinence-associated dermatitis: a consensus." *Journal of Wound Ostomy & Continence Nursing*. **2007** Jan 1;34(1):45-54.
26. Katoh N, Ohya Y, Ikeda M, Ebihara T, Katayama I, Saeki H, Shimojo N, Tanaka A, Nakahara T, Nagao M, Hide M. "Japanese guidelines for atopic dermatitis." *Allergology International*. **2020**;69(3):356-69.
27. Callen J, Chamlin S, Eichenfield LF, Ellis C, Girardi M, Goldfarb M, Hanifin J, Lee P, Margolis D, Paller AS, Piacquadio D. "A systematic review of the safety of topical therapies for atopic dermatitis." *British Journal of Dermatology.* **2007** Feb 1;156(2):203-21.
28. Snyder A, Farhangian M, Feldman SR. "A review of patient adherence to topical therapies for treatment of atopic dermatitis." *Cutis.* **2015** Dec 1;96(6):397-401.

29. Flohr C, Mann J. "New insights into the epidemiology of childhood atopic dermatitis." *Allergy.* **2014** Jan;69(1):3-16.
30. "Salmi TT. Dermatitis herpetiformis." *Clinical and experimental dermatology*. **2019** Oct 1;44(7):728-31.
31. Adalsteinsson JA, Kaushik S, Muzumdar S, Guttman-Yassky E, Ungar J. "An update on the microbiology, immunology and genetics of seborrheic dermatitis." *Experimental dermatology.* **2020** May;29(5):481-9.
32. https://www.verywellhealth.com/thmb/1QkaLWIIzfp85Fc2KK7u2MkPVJI=/1500x0/filters:no_upscale():max_bytes(150000):strip_icc()/symptoms_
33. Brenninkmeijer EE, Schram ME, Leeflang MM, Bos JD, Spuls PI. "Diagnostic criteria for atopic dermatitis: a systematic review." *British Journal of Dermatology*. **2008** Apr 1;158(4):754-65.
34. Warshaw EM. "Therapeutic options for chronic hand dermatitis." *Dermatologic therapy*. **2004** Sep;17(3):240-50.
35. Dorynska A, Spiewak R. "Epidemiology of skin diseases from the spectrum of dermatitis and eczema". *Malays J Dermatol*. **2012** Dec 1;29:1-1.
36. https://earimediaprodweb.azurewebsites.net/Api/v1/Multimedia/6809911b-fd49-41c6-a5
37. Hashemi SR, Davoodi H. "Herbal plants and their derivatives as growth and health promoters in animal nutrition". *Veterinary research communications*. **2011** Mar;35:169-80.
38. Bhardwaj S, Verma R, Gupta J. "Challenges and future prospects of herbal medicine". *International Research in Medical and Health Sciences*. **2018** Oct 31;1(1):12
39. Thakur M, Kumar R. Mulching: "Boosting crop productivity and improving soil environment in herbal plants". *Journal of Applied Research on Medicinal and Aromatic Plants*. **2021** Feb 1;20:100287.
40. Singh A, Mishra A, Chaudhary R, Kumar V. "Role of herbal plants in prevention and treatment of parasitic diseases." *J. Sci. Res.* **2020**;64(1):50-8.
41. Sivakumar T. "A recent review on phytochemicals commonly found in herbal plants". *International Journal of Botany Studies*. **2022;**7(12):54-7.
42. https://m.mediaamazon.com/images/I/71PKoAizUoL._AC_UF1000,1000_QL80_.jpg
43. Inamdar N, Edalat S, Kotwal VB, Pawar S. "Herbal drugs in milieu of modern drugs". *International Journal of Green Pharmacy (IJGP).* **2008**;2(1).
44. Mohammad Azmin SN, Abdul Manan Z, Wan Alwi SR, Chua LS, Mustaffa AA, Yunus NA. "Herbal processing and extraction technologies." *Separation & Purification Reviews.* **2016** Oct 1;45(4):305-20.
45. https://www.manhattandermatologistsnyc.com/wp-content/uploads/2016/12/Seborrheic-Dermatitis-Dermatologist-NYC.jpg
46. Howell MD, Parker ML, Mustelin T, Ranade K. Past, "present, and future for biologic intervention in atopic dermatitis." *Allergy.* **2015** Aug;70(8):887-96.
47. Hatch KL, Maibach HI. "Textile dye allergic contact dermatitis prevalence." *Contact Dermatitis.* **2000** Apr;42(4):187-95.
48. Kaufman BP, Guttman-Yassky E, Alexis AF. "Atopic dermatitis in diverse racial and ethnic groups—variations in epidemiology, genetics, clinical presentation and treatment." *Experimental dermatology*. **2018** Apr;27(4):340-57.