Mini Review
Volume 8:6, 2022

Journal of Cosmetology & Trichology

ISSN: 2471-9323

Open Access

A Comprehensive Review of Seborrheic Dermatitis and Dandruff

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Abstract

Seborrheic Dermatitis (SD) and dandruff are of a consistent range of the very illness that influences the seborrheic region of the body. Dandruff only affects the scalp and is characterized by itchy, flaking skin with no obvious inflammation. The scalp and other seborrheic areas can be affected by SD, which causes pruritus, inflammation, itching, scaling and flaking of the skin. The pathogenesis of SD and dandruff is influenced by a variety of intrinsic and environmental factors, including sebaceous secretions, skin surface fungal colonization, individual susceptibility and interactions between these factors. We present a summary of the most recent information regarding SD and dandruff, including epidemiology, disease burden, clinical manifestations and diagnosis, treatment, genetic studies in human and animal models and risk factors. In animal models, genetic and biochemical research provides additional insight into the pathophysiology and treatment strategies.

Keywords: Scalp microbiome • Metagenomics • Dandruff • Biotin

Introduction

The role of the skin microbiome in skin health through a variety of mechanisms, including immune response modulation of the host and protection against skin pathogens, is also becoming apparent. The last ten years have been crucial in establishing the functional impact of the human gut microbiome on health. The host benefits from the skin microbiome's interaction with keratinocytes and the innate immune system, which stimulates the production of antimicrobial peptides, free fatty acids, cytokines and chemokines. However, a better understanding of the influence that the scalp microbiome, specifically the bacteriome, has on scalp health and the pathophysiology of scalp-related disorders requires an understanding of the bacteriome's functional role [1].

Description

An expanding field of study is the immuno-modulating potential of the microbiome at distant organ sites. The following areas of research have emerged as a result of the influence of the gut microbiome on distant organs like the lung, brain and skin: axis between the gut and the brain, the gut and the skin. The microbial composition is altered by the innate and adaptive immune systems; However, the immune system can also be manipulated by the local microbiome. The mechanisms by which the gut microbiome affects the immune system of the skin and vice versa are currently being studied. There are a number of skin conditions that mimic gut comorbidities. A number of studies have shown that gut dysbiosis and skin homeostasis imbalances are linked in both directions, with gut microbiota dysbiosis playing a particular role in the pathophysiology of multiple inflammatory diseases.

There is some speculation regarding the marine Malassezia's evolutionary origins and their relationship to species on land that are better known [2]. A phylogeny constructed from sequenced isolates and environmental samples reveals a significant amount of phylogenetic novelty within and around the Malassezia lineage. A large monophyletic group of marine water column mycoplankton, sequences from separate studies of marine anoxic environments and combinations of host-associated (coral and coralline algae) Malassezia that group with presumably free-living taxa in various marine and terrestrial habitats are all supported by evidence from both large and small subunit loci of the ribosomal cistron. The fact that some of these isolates are separated from their sister taxa by relatively long branch lengths suggests either a particularly rapid diversification or that intermediate taxa have not yet been sampled and sequenced.

Dermatology and cosmetics have recently turned their attention to the human skin microbiome. To gain insight into the mechanisms that are responsible for healthy skin and its appearance, it is essential to comprehend the skin microbiota—the collection of essential microorganisms that live on our skin—and how to maintain its delicate balance. Dysbiosis, an imbalance in the composition of the skin's microbiota, is linked to a number of skin conditions. These conditions can be pathological, like eczema, acne, allergies, or dandruff, or non-pathological, like sensitive skin, irritated skin, or dry skin [3]. As a result, the creation of methods that preserve or restore the individual microbiota's natural balance is a novel target for skincare applications as well as dermatologists. This review provides an overview of the knowledge that is currently available about the skin microbiome, as well as a description of the skincare industry's current efforts to assist in restoring and balancing the structure and functionality of the skin microbiota.

Even though SD is much less common, outpatient office visits alone cost $58 million in 2004 in the United States and prescription drugs cost $109 million. The direct costs of SD were estimated to total $179 million and the indirect costs of lost work days were $51 million. These costs included over-the-counter products and hospital services. Additionally, SD has a significant negative impact on patients' quality of life (QOL) in the form of psychological distress or low self-esteem due to its frequent appearance on the face and other visible areas; $1.2 billion was offered as payment for symptoms relief. In addition, despite the fact that the impact on quality of life in SD patients was ranked lower than in atopic or contact dermatitis patients, it was found to be greater than skin ulcers and damage from solar radiation and women, younger patients and subjects with a higher level of education were more affected [4].

Antimicrobial peptides (AMPs), phagocytes and innate lymphoid cells (ILCs) are the second line of defense. The innate immune system is made up of these two initial defenses. Cathelicidin and psorasin, two AMPs

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Received: 25 November, 2022, Manuscript No. JCTT-22-85214; **Editor assigned:** 28 November, 2022, PreQC No. P-85214; **Reviewed:** 14 December, 2022, QC No. Q-85214; **Revised:** 20 December, 2022, Manuscript No. R-85214; **Published:** 27 December, 2022, DOI: 10.37421/2471-9323.2022.8.190

produced by keratinocytes, serve as an effective skin barrier. Cathelicidin is broken down by the serine protease Kallikrein 5 (KLK5) into active peptides like LL-37. Contrasted with the skin, the creation of the digestive epithelial boundary fluctuates all through the gastrointestinal parcel. Similar to the skin, the mouth and esophagus, the proximal portion of the gastrointestinal tract is covered in multiple layers of squamous epithelium and is cleansed by saliva and other gland mucus. A single layer of active cells, such as goblet cells for mucus secretion, enteroendocrine cells for hormone secretion, enterocytes or colonocytes for absorption and so on, make up the remaining portion of the digestive tract. The immune system safeguards the integrity of the intestinal barrier, which is made up of a single layer of enterocytes or colonocytes. The absorptive usefulness of the enterocytes in the small digestive system results a broken layer of bodily fluid with less cup cells. Paneth cells that secrete AMPs and integrate into the complex mucus layer are abundant in the small intestine's crypts [5].

Conclusion

Using a novel topical dry scalp product clinically reduced the symptoms and severity of dry scalp conditions, improved patient-reported quality of life across all assessed domains and had no adverse effects in adults, according to our preliminary findings. These outcomes are promising and expand upon how we might interpret how medicines focusing on the skin microbiome can improve atopic infection results. This novel product's safety and efficacy will be further clarified in subsequent randomized controlled trials, which will also assist in identifying the populations most likely to benefit.

Acknowledgement

None.

Conflict of Interest

The authors declare that there is no conflict of interest associated with this manuscript.

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How to cite this article: Saxena, Rituja. "A Comprehensive Review of Seborrheic Dermatitis and Dandruff." J Cosmo Tricho 8 (2022): 190.