



Microbiological Perspectives of Common Skin Rashes

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DESCRIPTION

With an average surface area of 30 m² in adults, the skin is the biggest organ in the human body. A group of patches of red, inflamed skin that is frequently an indication of an underlying ailment or disorder is referred to as a rash. Microbes can be found in every niche of the environment and coexist with humans and each other. Members of these groups include bacteria, archaea, viruses, fungi, and protists. These are examples of communities. Microbes can be found in every niche of the environment and coexist with humans and each other. Viruses, bacteria, fungus, and parasites can all cause skin disorders. *Staphylococcus aureus* and group A-hemolytic streptococci are the most frequent bacterial skin pathogens. They discovered that Thaumarchaeota species account for approximately 88% of all Operational Taxonomic Units (OTUs), with *Euryarchaeota* accounting for the remainder.

Dust mites can be found on human skin, particularly on the face, near the sebaceous glands and in the hair follicles. Microbes protect humans and animals from foreign invaders, educate and stimulate the immune system, generate antimicrobials, promote digestion, and manufacture vitamins, among a variety of other tasks. The bacteria that make up the human skin microbiome are divided into four groups *Bacteroidetes*, *Actinobacteria*, *Firmicutes* and *Proteobacteria*. Primary skin infections are caused by a single pathogen and usually affect normal skin. They have a distinct clinical presentation and disease history. Common varieties include impetigo, folliculitis, and boils. *S. aureus*, *hemolytic streptococci*, and *coryneform* bacteria are the most common main skin pathogens. Insect bites are a common way for these organisms to enter the body through a breach in the skin. The most common bacteria are *Corynebacterium*, *Micrococcus*, *Streptococcus*, and *Acetobacter*. According to estimates, the *Cutibacterium*, *Staphylococcus*, and *Corynebacterium* genera, which have been isolated from virtually every skin location, may account for 45% to 80% of the overall skin microbiome. Measles, varicella, gonococcemia, and staphylococcal scalded skin syndrome are examples of systemic illnesses with cutaneous symptoms produced by the pathogen or

toxins. Because dermatophytic fungi have a strong affinity for keratin, they can infect keratinized tissue such as nails, hair, and skin.

Commensal bacteria are critical for maintaining a healthy skin microbiome by preventing dangerous infections from colonizing the skin. Colonization resistance mechanisms are critical for developing the skin microbiota. *Staphylococci* are gram positive cocci that cluster together. *Staphylococcus aureus* is the most well-known pathogen in this category. Because of the high humidity in certain niches, such as the navel and inner elbow, *Staphylococcus* and *Corynebacterium*, the most abundant bacterial residents in moist skin areas, thrive. More than 90% of HIV patients experience cutaneous and mucosal problems at some point throughout their illness. Skin diseases are a serious public health concern in both developed and developing countries.

S. aureus toxin-producing strains induce scalded skin syndrome. This disease is characterised by vesicles on the body surface, which cause the skin to peel and have a scalded look. It is most commonly encountered in young children and babies. In comparison to moist and oily niches, drier areas of skin tend to support a more varied microbiota. Gram-positive bacteria, such as *Streptococcus* species, are abundant in the dry skin microbiome. Formerly known as *Pitysporium*, *Malassezia* is a genus of dimorphic, predominantly lipophilic fungi. It is the most common fungal skin commensal, accounting for 50-80 percent of all skin fungi, and can be found in oily areas such as the face, scalp, and back. *Malassezia* species dwell in the sebaceous glands' infundibulum, where they feed on the lipids contained in human sebum. The synthesis of antimicrobials such as bacteriocins and effector chemicals by established commensal microorganisms inhibits the growth of invasive species through active antagonism mechanisms. In this environment, high humidity, heat, and a lack of cleanliness are linked to a higher risk of fungal and bacterial skin infections. Microbial infections of the skin, particularly those caused by Group A *Streptococci* or *Staphylococcus aureus*, are frequently exacerbated by these conditions.

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