Fact Sheet Colonization Infection Continuum - Micreos Staphefekt SA.100 (Gladskin)

Intervening at the early stage with Staphefekt / Gladskin

In and on our body, a vast number of 100 trillion microbes are present, ten times as many as our own human cells. After birth, the sterile skin is colonized very quickly by bacteria present in the environment, giving rise to a valuable, very complex and dynamic ecosystem, the 'microbiome'.[1]

The body relies on the microbiome for normal physiological functioning. Disruptions of the microbiome - for example by antibiotics - change the balance in the microbial community, enabling overgrowth of pathogenic bacteria.[1]

The interaction of bacteria with the human body can be described across a spectrum of stages, the Colonization Infection Continuum (figure). This Continuum is characterized by (1) the site of bacterial presence, (2) the effect of bacteria on the tissues and (3) the subsequent reaction of the body. Every bacterial infection is preceded by colonization by that particular bacterial species. By evading local barriers of the skin and the immune system, progression to severe systemic infection and sepsis can eventually occur.[2]

The different stages of the Colonization Infection Continuum are interrelated. Every influence exerted on bacteria during the colonization stage - such as emerging antimicrobial resistance or eradication of pathogens - has its 'downstream' effect on the later stages of infection. The use of antibiotics induces resistance and antibiotics are not selective in the bacterial species they target. This makes them unsuitable for longer-term treatment. As a result, they are mainly used for infections at the later stages of the Continuum (figure left).[2]

Endolysins are targeted antibacterial enzymes. Contrary to antibiotics, endolysins are able to kill only a single *unwanted* bacterial species, leaving the beneficial ones intact. And by targeting essential parts of the bacterial cell wall, resistance is neither observed nor expected.[3,4,5] These two unique features distinguish endolysins from traditional antibiotics and make them suitable for long-term daily use (suppression therapy), intervening at the early stages of the Continuum, before colonization leads to infection (figure right).[2]

The bacterium *Staphylococcus aureus* is the most common cause of skin inflammation and infection, both at home and in the hospital after surgery.[6] Many people are frequently colonized with *S. aureus* in the nose or on the skin.[6] Staphefekt SA.100 is an endolysin that kills only *S. aureus*, including MRSA, leaving the beneficial bacteria unharmed.[4,5] With Staphefekt, the first *targeted* therapy against *S. aureus* is available for long-term daily maintenance therapy, aimed at decreasing the burden of skin colonization and preventing progression to inflammation and infection. This strategy has proven successful in *S. aureus* related skin conditions such as folliculitis, furunculosis, eczema, rosacea and acne.[2,7]

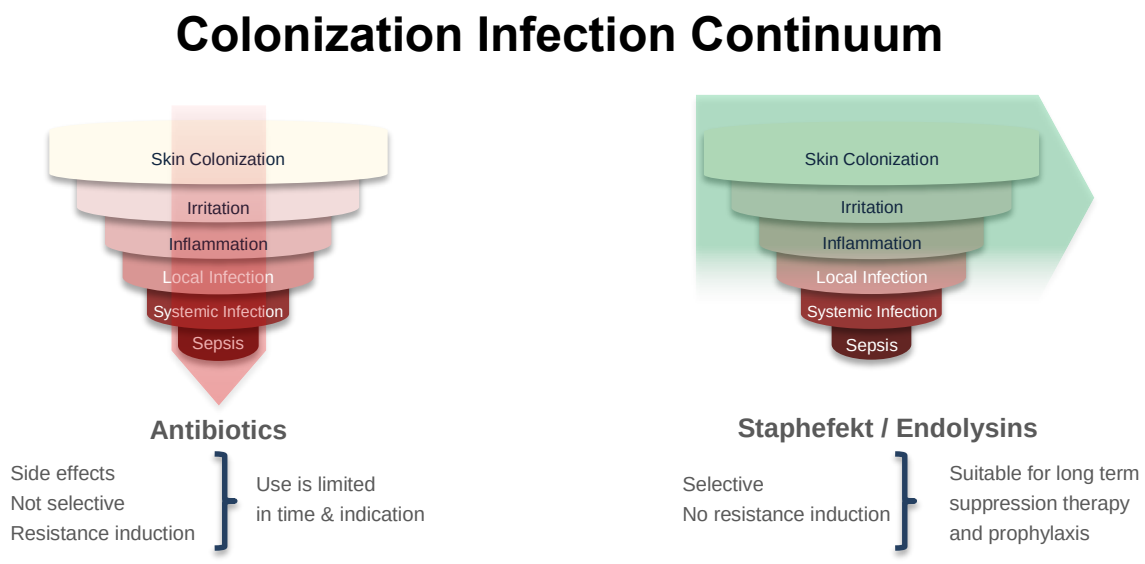

Figure. *Bacteria interact with the human body across a spectrum of stages, the Colonization Infection Continuum. Every infection is preceded by colonization, after which progression to severe systemic infection and sepsis eventually can occur. Because antibiotics are not selective and induce resistance, their use is limited in time and indication. Unlike antibiotics, endolysins like Staphefekt are very selective and do not induce resistance. Therefore, they can be used as long as necessary, to suppress S. aureus colonization and intervene at the early stages of the Continuum, before colonization leads to infection.*

References

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