

**Clinical prevalence and antimicrobial susceptibility of *Staphylococcus aureus* and *Staph. intermedius* in dogs.**  
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AIMS: This study was undertaken to investigate whether the antibiotic resistance of *Staphylococcus aureus* and *Staph. intermedius* varies with the site of isolation, sex or age of dogs. METHODS AND RESULTS: A total of 867 isolates of *Staph. aureus* and 1339 isolates of *Staph. intermedius* were obtained from nose, eye, ear, reproductive extremity, urine, abscess, skin and throat isolates. *Staphylococcus intermedius* isolates were isolated most frequently and adult and male dogs were more common compared with juveniles and/or female dogs. Antimicrobial resistance was commonly found for penicillin G, lincomycin, tetracycline and trimethoprim-sulphamethoxazole in both *Staphylococcus* species. Surprisingly, we detected significant resistance to cloxacillin in male (67.1%) and female (69.4%) *Staph. aureus* isolates, irrespective of the anatomical site of isolation. The resistance or susceptibility of isolates of *Staph. aureus* from reproductive extremities and isolates of *Staph. intermedius* from ear, eye and abscess sites was associated with the age of the animal. CONCLUSIONS: Antimicrobial susceptibilities in *Staph. aureus* and *Staph. intermedius* often differed with regard to the site of isolation, sex and age of the animal. SIGNIFICANCE AND IMPACT OF THE STUDY: Increasing antimicrobial resistance in staphylococci in veterinary medicine complicates the empirical selection of antimicrobial agents. These complications reveal a continuously evolving, complicated multifactorial process of the site of isolation, sex and age of the animal.

**Adherence by *Staphylococcus intermedius* to canine keratinocytes in atopic dermatitis.**

Mcewan NA.

The adherence of *Staphylococcus intermedius* to canine keratinocytes in normal dogs was compared to that in dogs suffering from atopic dermatitis, primary seborrhoea and bacterial pyoderma. Statistically significant greater adherence by *S. intermedius* to keratinocytes occurred in atopic dogs and dogs suffering from pyoderma when compared with the normal group ( $P < 0.01$ ) and dogs suffering from primary seborrhoea ( $P < 0.05$ ). This is similar to the results of a study of human atopic dermatitis by Cole and Silverberg (1986) who demonstrated increased adherence by *S. aureus* to keratinocytes from atopic dermatitis patients when compared with adherence to keratinocytes in a variety of non-atopic dermatoses. This increased adherence by pathogenic staphylococci to keratinocytes may in part explain the high incidence of staphylococcal pyoderma seen in both canine and human patients suffering from atopic dermatitis. Copyright 2000 Harcourt Publishers Ltd.

**Isolation of *Staphylococcus schleiferi* from dogs with pyoderma.**

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OBJECTIVE: To determine frequency with which *Staphylococcus schleiferi* could be isolated from dogs with pyoderma and antimicrobial susceptibility patterns of isolates that were obtained. DESIGN: Prospective study. ANIMALS: 54 dogs with a first ( $n = 14$ ) or recurrent (40) episode of pyoderma. PROCEDURE: Specimens were obtained and submitted for bacterial culture. Isolates were identified as *S. schleiferi* on the basis of growth and biochemical characteristics. Two isolates were submitted for DNA sequencing to confirm identification. Methicillin susceptibility was determined by means of disk diffusion with oxacillin-impregnated disks. RESULTS: 3 of 14 dogs examined because of a first episode of pyoderma and 12 of 40 dogs examined because of a recurrent episode of pyoderma were receiving antimicrobials at the time of specimen collection. *Staphylococcus schleiferi* was not isolated from any dog with first-time pyoderma but was isolated from 5 dogs with recurrent pyoderma that were not receiving antimicrobials at the time of specimen collection and 10 dogs with recurrent pyoderma that were receiving antimicrobials. Nine isolates were identified as *S. schleiferi* subsp. *schleiferi*, and 6 were identified as *S. schleiferi* subsp. *coagulans*. All *S. schleiferi* subsp. *schleiferi* isolates were resistant to methicillin, but only 2 *S. schleiferi* subsp. *coagulans* isolates were. Two methicillin-resistant isolates were also resistant to fluoroquinolones, and 1 isolate had intermediate susceptibility to fluoroquinolones. CONCLUSIONS AND CLINICAL RELEVANCE: Results suggest that *S. schleiferi* subsp. *schleiferi* and *S. schleiferi* subsp. *coagulans* may be isolated from dogs with recurrent pyoderma. Although isolates from dogs with pyoderma were frequently resistant to methicillin, multiple drug resistance was uncommon.

**Staphylococcal enterotoxin induced IL-5 stimulation as a cofactor in the pathogenesis of atopic disease: the hygiene hypothesis in reverse?**

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BACKGROUND: The incidence of *Staphylococcus aureus* (*S. aureus*) colonization on the skin of patients with

atopic eczema/dermatitis syndrome (AEDS) is approximately 90% and a variety of evidence implicates epidermal staphylococcal infection as a pathogenic factor in atopic dermatitis. However, the mechanism(s) underlying the effects of this organism in the disease process are unclear. The cellular responses of AEDS sufferers and asymptomatic atopic individuals to bacterial superantigens (SAg) were investigated in an attempt to elucidate the role of staphylococcal enterotoxin B (SEB) in atopic disease. METHODS: Peripheral blood mononuclear cells (PBMC) were isolated from normal nonatopic adults, asymptomatic atopic individuals, patients with active AEDS and patients with active allergic asthma. The cells were cultured for 24 or 96 h with house dust mite (HDM), SEB and phytohaemagglutinin (PHA), and the supernatants were assayed for cytokine levels. RESULTS: Staphylococcal enterotoxin B selectively stimulates the production of interleukin (IL)-5 in AEDS sufferers but not in asymptomatic atopics or nonatopics. Additionally, we observed comparable susceptibility to the IL-5-stimulatory effects of SEB in allergic asthmatics. CONCLUSIONS: Given the central role of IL-5-driven eosinophilia in progression from mild atopy to severe disease, these findings provide a plausible mechanism for the AEDS-promoting effects of staphylococcal SAg. Staphylococcal enterotoxin B may also have a similar role in atopic respiratory disease.

**Positive atopy patch test reaction to *Malassezia furfur* in atopic dermatitis correlates with a T helper 2-like peripheral blood mononuclear cells response.**

Johansson C, Eshaghi H, Linder MT, Jakobson E, Scheynius A.

The yeast *Malassezia furfur* belongs to the normal cutaneous flora, but is also a triggering allergen that can contribute to atopic dermatitis. To illuminate the effect of circulating allergen-specific T cells in atopic dermatitis, the peripheral mononuclear cell response was correlated with the in vivo skin prick test and atopy patch test reactivity to *M. furfur*. None of 16 healthy controls showed any positive in vivo reaction. The 40 atopic dermatitis patients, of whom 18 had serum IgE reactivity to *M. furfur*, were subdivided according to their in vivo reaction to *M. furfur* extract into three groups: skin prick test positive/atopy patch test positive (n = 12), skin prick test positive/atopy patch test negative (n = 12), and skin prick test negative/atopy patch test negative (n = 16). The skin prick test positive/atopy patch test positive and the skin prick test positive/atopy patch test negative groups had a significantly higher peripheral mononuclear cell stimulation index than the healthy controls. Interestingly, the stimulation index values in the skin prick test positive/atopy patch test positive group were significantly higher than in the skin prick test positive/atopy patch test negative group. In the *M. furfur* skin prick test positive atopic dermatitis patients (n = 24) a correlation was found between stimulation index and the *M. furfur* atopy patch test reactions, but not between stimulation index and *M. furfur*-specific serum IgE levels. Skin prick test positive and/or atopy patch test positive reactions to the recombinant *M. furfur* allergens rMal f 1, rMal f 5, and rMal f 6 were observed in 7, 14, and 16 of the 40 atopic dermatitis patients, respectively. Further, there was a correlation between production of the T helper 2-related cytokines interleukins 4, 5, and 13 and stimulation index to *M. furfur* extract, but not between the T helper 1-related interferon-gamma and stimulation index to *M. furfur* extract. Our data strongly suggest a relationship between circulating specific T cells with a T helper 2-like cytokine profile and positive atopy patch test reactions.

