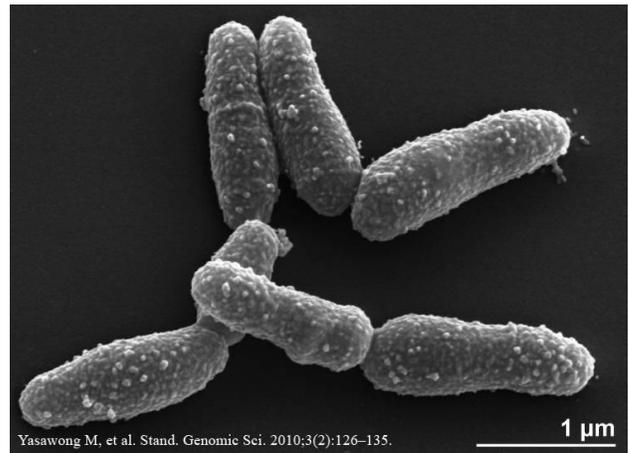


Arcanobacterium haemolyticum

What are you missing in your throat cultures?



by Daniel Berger

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He earned his Bachelor's Degree in Microbiology from California Polytechnic State University in San Luis Obispo, CA.

Daniel has been instrumental in the development of many new and innovative products released by the Hardy Diagnostics' R&D Dept. over the past four years, among them are: HardyCHROM™ SS, HardyCHROM™ Carbapenemase, Arcanobacterium Selective Agar, and Shigatoxin Induction Broth.

A Case History

In May 2005, ten students in South Korea were hospitalized for an unidentified illness. Their symptoms were similar to those seen with scarlet fever, including rashes and fevers. The most severe cases also exhibited low blood pressure.

During the investigation, many more students presented with similar symptoms, again with an unknown cause.

In early July 2005, the Korea Center for Disease Control and Prevention finally determined that the cause of the outbreak was Arcanobacterium haemolyticum. It was believed that the disease had spread through student contact in classrooms and dormitories.

By this time, the outbreak had spread significantly and a total of 142 students had become infected by the rare bacterium. This was the first reported case of mass infection by A. haemolyticum in South Korea.

A. haemolyticum is a beta-hemolytic gram-positive, pleomorphic, facultative anaerobic rod that has been implicated as an etiologic agent of non-streptococcal pharyngitis, especially in adolescents and young adults.

Corynebacterium haemolyticum, now named *Arcanobacterium haemolyticum*, was first described in 1946 as the pathogenic agent causing pharyngitis and cutaneous infections among U.S service members and indigenous peoples of the South Pacific.

It has also been described as a cause of skin and wound infections, osteomyelitis, sepsis, central nervous system infections, endocarditis, cellulitis, sinusitis, meningitis, pharyngotonsillitis, peritonsillar abscesses, and systemic infections in all age groups. In one study, it was found that half of the infected patients with pharyngitis also presented with a rash, usually found on the arms and legs.

Since the symptoms of *A. haemolyticum* pharyngitis may be confused with those of group A streptococci, diphtheria and drug allergies, it is important to screen and test for this organism appropriately.

It is estimated that the number of throat infections caused by *A. haemolyticum* ranges from 5 to 13% compared to those caused by group A streptococci, but this may be an underestimate. In one study, it was found that the most affected age group was 15 to 18 year olds.

Early isolation and identification of *A. haemolyticum* is necessary to ensure proper treatment and prevent potential outbreak.

If sheep blood agar, or even a selective strep agar, is used to set up throat cultures, this overlooked and underreported cause of non-streptococcal pharyngitis is often missed.

A. haemolyticum typically grows slowly and exhibits less well defined beta-hemolysis on sheep blood agar and is easily masked by commensal throat flora or interpreted as an oral contaminant; thus the genus *Arcanobacterium*, meaning “secretive

bacteria,” is very appropriate.

Because it is often overlooked, *A. haemolyticum* may result in missed or delayed diagnoses.

The use of a selective medium that effectively inhibits *S. pyogenes*, as well as commensal organisms, may significantly increase the detection rate of *A. haemolyticum*.

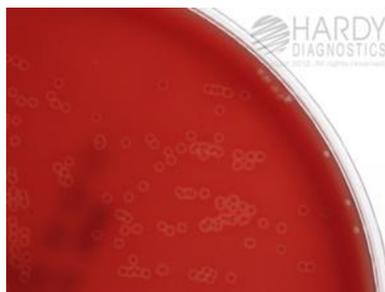


Figure 1: *Arcanobacterium haemolyticum* (ATCC® BAA-1784) colonies growing on *Arcanobacterium Selective Agar* (Cat. no. A134). Incubated anaerobically for 48 hours at 35 deg. C. The top photo shows the colonies by reflected light. The bottom photo shows the beta-hemolysis by transmitted light.

Although *A. haemolyticum* is usually sensitive to penicillin *in vitro*, there are many reported treatment failures. For this reason, erythromycin is the drug of choice, rather than penicillin. This is why

identification of this organism and differentiation from group A strep is of extreme importance.

Hardy Diagnostics has just released [Arcanobacterium Selective Agar](#) (also known as Berger's Agar, Cat no. A134), a novel medium for the isolation of *Arcanobacterium haemolyticum*, especially from respiratory specimens.

Selective agents have been added to the medium to inhibit *Streptococcus pyogenes* and normal oral flora without affecting the growth of *Arcanobacterium haemolyticum*.

Also released by Hardy Diagnostics is a bi-plate, consisting of Group A Beta Strep Selective Agar and *Arcanobacterium Selective Agar* (Cat. no. J134) so that throat cultures can be effectively screened for both Group A Strep and *Arcanobacterium* simultaneously.

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