

# PROBIOTICS AND ORAL HEALTH

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Australian Breath Clinics



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Have you ever wondered why babies don't have bad breath? Why antibiotics don't cure periodontal disease? Or even why some people get tooth decay but not others?

Well simply put it is all about bacteria, mouth balance and biofilm. Bacteria are smart little bugs that can quickly multiply in the right environment and search for other like bacteria to form colonies. Once they find each other, they bind together to form a protective biofilm. This is a community that supports and feeds and protects the bacteria. Once in this biofilm they are immune to antibiotics and antiseptics that we have developed.

Unfortunately, our busy lifestyles, medications, illnesses and the quality of mouth cleaning in the general population all go towards enhancing destructive biofilm that cause tooth decay, bad breath and periodontal disease. And this is destined to get worse as we age.

## So how can we outsmart these bugs?

Well it's no different than the story of Troy. We need to send in our own good bacteria (probiotics) to infiltrate the destructive biofilm and attack the harmful bacteria right where they live.

I believe this is the future of Dentistry and Oral Health? We just need to take simple daily doses of probiotics along with our vitamins to stop the destructive bacteria.

I want to introduce you to two amazing Probiotic examples from Professor Tagg at Otago University and Dr. Hillman from Harvard University

### 1. BLIS K12

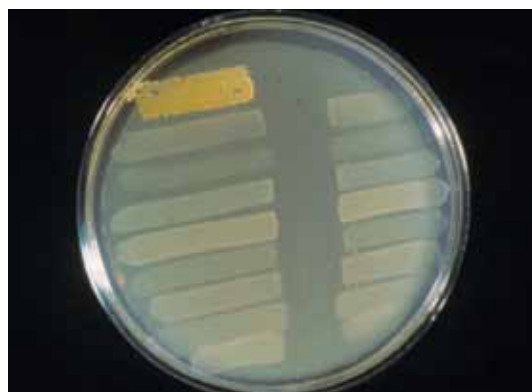
This is a Probiotic called *Streptococcus salivarius* K12. Professor John Tagg from Otago University discovered it. He was looking for protective mouth bacteria that could prevent sore throats, which can lead to complications such as rheumatic fever in children. After following Dunedin schoolchildren for many years, he found that some children didn't appear to get sore throats as often as others.

When he analysed their saliva Professor Tagg found that the children getting less sore throat appeared to have certain types of bacteria in their saliva that the other schoolchildren did not have.<sup>1</sup> These were BLIS (Bacteriocin Like Inhibitory Substances)-producing bacteria or bacteria that produced natural

antimicrobials. The strongest producer of these antimicrobials was by a strain called *S.salivarius* K12. *Streptococcus salivarius* are common in the mouth and make up to 40% of all the bacteria in the normal healthy mouth. *Streptococcus salivarius* K12 actually produces two powerful anti-microbial BLIS proteins that inhibit encroaching deleterious bacteria, rupturing the cell wall and thus stopping the multiplication of the bad bacteria.

In the photo a vertical streak of *S.salivarius* K12 is placed on an agar plate. Several horizontal streaks of bacteria are then placed on top.

RESULT: Wherever the vertical streak of *S.salivarius* K12 touches the horizontal streaks, bacteria fail to grow. This is due to the BLIS proteins released by the *S.salivarius* K12 bacteria.



### There are two ways BLIS can be used in the mouth.

For bacterial protection against such things as bad breath, you need to first knockdown the host *S. salivarius* population to make room for the new K12 Probiotic bacteria. You can do this with a number of different mouthwashes such as Chlorhexidine Gluconate, Sodium Hypochlorite or Chlorine Dioxide. Then you simply take a dose of Probiotic in powder or lozenge format to repopulate the mouth. You take the knockdown rinse twice a week to keep a good knockdown level, and you take the Probiotic once or twice every day to keep a good level of *S. salivarius* K12. Easy as that!

For assisting with immune benefits, such as when you fly in planes or think you may be getting a cold, it is a bit different. Here you do not need the knockdown rinse first. Simply take 4 doses of probiotics the



Colonies from person colonised with K12 stabbed in plate with an indicator organism showing BLIS activity of K12. The red areas are the BLIS activity or "kill zone"



Three streaks on blood plate – bottom streak periopathogen alone (hemolysis), middle streak K12 and periopathogen no hemolysis, top streak K12 only and no hemolysis. Infers presence of K12 prevents lysis of blood cells/ tissue. Hemolysis means rupturing of red blood cells. This is something done by pathogenic bacteria

day before flying, 4 doses the day of flying, and 4 doses the day after flying. It has been shown that when you do this, your body is stimulated to make more of the immune

compound interferon, a molecule associated with protecting against acute viral infections.

## 2. PROBIORA3

ProBiora3 is a blend of three naturally occurring strains of bacteria for use in the promotion of oral health, including *Streptococcus oralis* strain KJ3SM; *Streptococcus uberis* strain KJ2SM; and *Streptococcus rattus* strain JH145SM<sup>2</sup>

In a healthy human oral cavity, *S.oralis* and *S.uberis* are commonly found in significant amounts, and conversely, the levels of bacteria associated with periodontal disease are usually quite low. The opposite situation prevails in periodontal disease sites, at which the beneficial bacteria *S.oralis* and *S.uberis* are usually undetectable.

Discovered by Dr Hillman of Harvard University, he has demonstrated that *S.oralis* and *S.uberis* produce hydrogen peroxide, which interferes with the growth of certain potentially harmful periodontal bacteria, and also gently and naturally whitens teeth.

The third bacterial strain in the ProBiora3 blend, *S.rattus*, is able to establish and maintain a healthy balance of

bacteria on the tooth surfaces by competing with certain other potentially harmful bacteria associated with tooth decay.

ProBiora3 is easy to take. It currently comes in powder format. Simply take a dose morning and night after cleaning your teeth for best results. After about 30 days of treatment you will notice a lightening of tooth enamel, and a fresher cleaner taste in your mouth. This is due to the colonization and release of low levels of Hydrogen Peroxide by the three Probiotic bacteria. I will have more to say about this particular Probiotic in the near future. ♦

For more information about BLIS K12 or ProBiora3, or about our Breath Clinics, please feel free to contact me directly on 1300-653-335 or visit [www.australianbreathclinic.com](http://www.australianbreathclinic.com)

## References

- 1 The Influence of Indigenous Bacteriocin-Producing *Streptococcus Salivarius* on the Acquisition of *Streptococcus Pyogenes* by Primary School Children in Dunedin, New Zealand. K.P Dierksen, J.R.Tagg
- 2 International Journal of Toxicology, 2009; 28:357-366. 2 Journal of Applied Microbiology, 2009; 107:682-690.

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