

# Probiotics for Breath Care and Treatment

## BAD BREATH OVERVIEW & INTRODUCTION

With the release of much scientific data over the last few years, we can confidently say that bad breath occurs due to a change in the bacteria of the mouth. The change needs to be a chronic change such as that seen with nasal problems, dry mouth or long term use of antibiotics and prescription medicines.

These opportunistic bacteria invade the biofilms or coatings that buildup daily and start to digest proteins found in the biofilms. The proteins are broken down to amino acids and waste products such as smelly sulphur compounds that saturate the saliva (causing a bad taste) or evaporate in mouth air (causing bad breath) or evaporate in nasal air (causing nasal smells).

The coatings or biofilms mainly occur on the tongue surface, teeth and gum pockets, back of the throat past the gag reflex, and in the nasal passages. As all these areas are connected, once a person has a case of chronic bad breath or halitosis (as it is medically known) all the biofilms need to be treated for any success to occur. This biofilm removal must also be done as well as changing of the mouth bacteria to a good probiotic bacteria level that is able to defend the mouth and stop the problem occurring again.



**DR GEOFFREY SPEISER** presented a Powerpoint lecture at The Good Health and Beauty Show in Sydney Australia. The convention was attended by people from all over the world, and was featured on radio

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## Treatment for Bad Breath

So treatment for bad breath involves a three pronged attack:

1. **Change the mouth bacteria** to a good probiotic bacteria that defends itself. These bacteria ideally should consume carbohydrates to prevent the breakdown to amino acids and waste products such as sulphur compounds. Two percent of the world's population are borne with such a bacteria in their mouths. The rest of us need to have a dietary supplement to have use of this probiotic.
2. **Remove the biofilms** where the bad breath bacteria live. Science has shown that bad breath bacteria do not bind to the teeth or tongue but rather to the coatings that build up on these surfaces. Further the coatings (biofilms) need to be more than 24 hours old to be able to support bad breath bacteria. This means a concerted program of biofilm removal performed every day will ensure the least amount of offensive bacteria and thus offensive smells.
3. **Change lifestyle factors** that promoted the bad breath in the first place. Pathogenic bacteria and also bad breath bacteria prefer to live in an acid mouth. So the lower the pH (more acidic) of the mouth the more bad breath bacteria. Things that stimulate acid mouth are lifestyle choices such as diet or sports drinks, coffee smoking and alcohol to name a few. The list is far longer and is explained in more detail in our treatment kits.

BreezeCare has had great success in achieving a treatment for bad breath, as we focus on all these three things.

## WHAT ARE PROBIOTICS

Probiotics is defined as the use of beneficial live bacteria to help the body deal with opportunistic bacteria. We all have heard about probiotic bacteria *Lactobacillus* and *Bifidus* that have been discovered to help gaseous stomachs and indigestion. However these bacteria are not useful for other parts of the body as they are specific bacteria from the stomach. The good news is that as antibiotics become less effective due to resistant strains of bacteria, the hunt for more probiotics has begun. Science is discovering some amazing strains.

## THE STORY OF STREPTOCOCCUS SALIVARIUS

Professor John Tagg from Otago University in New Zealand has spent his life looking for probiotic bacteria suitable to work in the mouth. His driving force was due to an attack of rheumatic fever he suffered in childhood, and the consequent ongoing

use of antibiotics he was forced to take. You may not realise that rheumatic fever is the result of someone (usually a child) coughing on another person and transmitting a sore throat bacteria called *Streptococcus Pyogenes*. This bacteria colonises the throat and releases toxins that can spread to the heart and cause heart damage (commonly called Rheumatic fever). There is also a theory that the toxins can spread to the brain and develop into Obsessive Compulsive Disorder.

Professor Tagg has spent his life's work looking for a probiotic that would prevent other children catching *Streptococcus Pyogenes*. He knew that such a probiotic would be able to defend itself against other mouth bacteria, and also must be a normal inhabitant of the mouth.

To find such a bacteria, Professor Tagg followed Dunedin schoolchildren through many years, analysing their saliva samples looking for differences. He was particularly interested in one child that never appeared to become ill in all those years of study. What Professor Tagg found in this child's saliva was actually quite amazing. This healthy child had a particular bacteria that became called *Streptococcus salivarius K12*. Other schoolchildren that normally got sick either did not have *Streptococcus salivarius* at all, or they had a normal derivative of the bacteria that was in everyone else's mouth flora.

Research of the medical journals found that *Streptococcus salivarius K12* could be found in 2% of the population, and that these lucky people rarely became ill or suffered from other mouth ailments such as bad breath (halitosis). The study of the mechanism of how this bacteria was different then began in earnest.

What Professor Tagg found was that *S.salivarius K12* was able to make two defence peptides (called BLIS - Bacteriocin Like Inhibitory Substance) that the probiotic fired at encroaching invading bacteria. The probiotic recognised the closeness of these invading bacteria by sensing the voltage change along the cell wall of the invading bacteria. The BLIS peptide was fired at the invader, and the peptide punctured a hole in the cell wall allowing vital nutrients to leak out of the invading bacteria, thus causing its death. Thus *S.salivarius K12* was able to maintain the status quo in mouth health, by controlling many opportunistic bacteria.

Although this probiotic is effective against many bacteria including *Streptococcus Pyogenes* it is not a magic pill. The probiotic needs to be placed in a healthy mouth with a suitable mouth environment in order to colonise the tongue surface. The probiotic BLIS K12, cannot survive in an acid environment, and therefore would not be able to colonise in a mouth high in acid, or lacking oxygen (as found in smokers and alcohol drinkers).

Professor Tagg informed Otago University about his amazing discovery. The university then formed a joint venture with private New Zealand entrepreneurs. The newly formed company was called BLIS Technologies and listed on the New Zealand stock exchange in 2001. BLIS Technologies continued to develop the efficiency of *Streptococcus salivarius K12* as a dietary substance to aid in the prevention of sore throats, and as a replacement probiotic after finishing a course of Antibiotics.

## **DR SPEISER AND AUSTRALIAN BREATH CLINIC**

However the use of BLIS K12 as a probiotic really accelerated when BLIS Technologies approached Dr Speiser of BreezeCare in 2004 to help develop a bad breath formulation based around the existing technology. Dr Speiser used his profound dental knowledge to help develop a Pre Rinse that can be used to clean and enhance the mouth, so that it would be receptive to the BLIS K12 bacteria.

Dr Speiser found that when a complete mouth regime of BLIS K12 colonisation, packaged with a cleaning regime to remove bacteria laden bio films, and then finally combined with avoidance of lifestyle triggers, equated to extremely fresh breath and taste by most of his patients who visited his Australian Breath Clinic. He scientifically proved this by taking saliva samples before during and after treatments. These samples were examined under microscope at BLIS Technologies, and showed that patients with high bad breath readings had little or no *Streptococcus salivarius* in their mouth. Yet after being on the Breath Clinic Program and achieving normal fresh breath scores, the patient saliva showed a high level of BLIS K12 probiotic.

In every case where breath readings did not substantially improve, the levels of BLIS K12 were low to non existent. These patients unfortunately were not able to correct their hostile mouth environment to allow a proper colonisation of BLIS K12 probiotic.

Since 2004, Dr speiser and his Australian Breath Clinic has been continually developing formulations to help neutralise hostile mouth environment, and thus make the probiotic K12 work in an even larger number of patients. The great success Dr Speiser has been achieving was recently recognised by winning the Australian Business Award for Enterprise 2006.