

# Do we take dry mouth seriously?



Geoffrey Speiser

By Dr Geoffrey Speiser

Dry mouth (xerostomia) is the feeling that there is not enough saliva in the mouth. Everyone has a dry mouth once in a while – if they are nervous, upset or under stress. But if you have dry mouth all or most of the time, it can be uncomfortable and can lead to serious health problems.

Unless you are a sufferer you cannot fathom how it impacts your life. It can cause difficulties in tasting, chewing, swallowing, sleeping and speaking. It can increase your chance of developing dental decay and other infections in the mouth. It can cause a burning feeling in the mouth and a dry feeling in the throat. It can cause your lips to crack and your tongue to be rough. And these symptoms persist all day and night, every day and night.

Yes, as dentists we understand the damaging effects it can have on teeth, but do we understand how demoralising it is to live with this condition. I have had patients (who were doctors) take themselves off their medications to try and reduce the Xerostomia they experienced. And their statement was simple: "I would rather die than live with this condition!" Dry mouth is not a normal part of aging. Yet at least 30% to 40% of people over 65 years complain of dryness of the mouth. These are epidemic proportions.

64% of all dry mouth episodes have been associated with poly-pharmacy (multiple medication use). This was



Hypertrophic Tongue Papillae

reported by the US Center for Disease Control and Prevention. In fact if you take five medications you have a 50% chance of dry mouth, and if you take more than six medications you have a 64% chance of dry mouth. So it is no surprise that 400 commonly prescribed medications are associated with dry mouth including anti-depressants, anticholinergics, analgesics and anti-inflammatory agents.

Autoimmune diseases such as Sjogren's syndrome, and illnesses such as cancer and diabetes amount for the

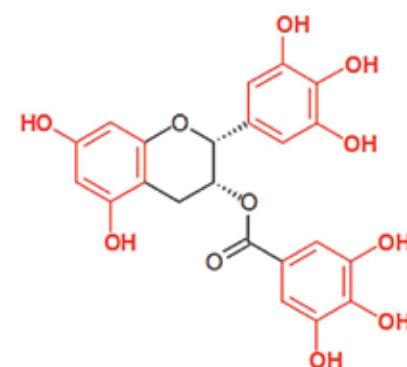
remaining 36% of dry mouth. Also the medical treatments for these conditions can cause the dry mouth. Finally don't forget tobacco and alcohol use.

## Could green tea catechins be the miracle treatment?

I think everyone acknowledges that Green tea is good for you, but do many people understand the scientific reasons for the health benefits.

The formal name for green tea is "Camellia sinensis". The major populations that consume it are China and Japan. The largest tea producers are India, Sri Lanka and China. 20% of tea produced is used for green tea processing; 78% to make black tea. Catechins (polyphenols) are preserved in green tea but not in black tea, which is consumed by most of the Western world. The most potent anti oxidant in green tea is called -epigallocatechin-3-gallate (EGCG)

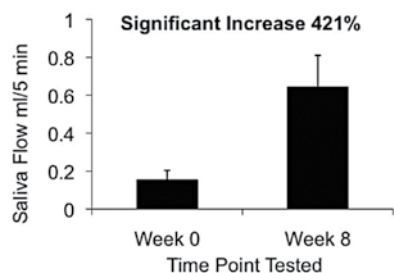
Dr Stephen Hsu published an article in "Autoimmunity 2007" (1) showing that green tea catechin EGCG reduced the lymphocytic infiltration in mice submandibular glands, and that EGCG protected normal human salivary acinar



Epigallocatechin gallate (EGCG)

SIGNS of DRY MOUTH (physical manifestation)	SYMPTOMS of DRY MOUTH (patient experiences)
Difficulty eating dry food such as biscuits	Dryness and soreness of mouth at night
Mucosal erythema	Bad breath (halitosis)
Atrophy of tongue papillae	Burning mouth especially to spicy foods
Dry and cracked lips	Increased dental decay or periodontitis
Thick frothy saliva	Mucositis (inflammation and ulceration)

2013 Georgia Regents University Study on Un-stimulated Saliva Flow



cells from Tumour Necrosis Factor (TNF) induced cytotoxicity.

Dr Hsu separated 30 mice into two groups, fed either water or water containing 0.2% Green Tea Polyphenols (GTP) for 3 weeks. Sera from the mice was then collected and analysed along with the submandibular glands. The results showed that Serum Autoantibodies in the "GTP water fed" animals was approximately 20% lower than that of the "water fed" only animals.

Also recent studies of the anti-inflammatory effects of green tea have shown promising results (2). An epidemiological study of 31,336 females, aged 55-69 years, and conducted from 1986 to 1997, concluded that there was an inverse association between tea consumption and the onset of rheumatoid arthritis.

Finally, a recent study undertaken in 2013 at Georgia Regents University Medical and Dental School showed a 400% increase in unstimulated saliva production, in patients taking four serves of Green Tea Lozenges a day for 8 weeks. I will talk at length about this study in the next article. The results of the study are currently undergoing publication.

So maybe Green Tea Catechins, and specifically EGCG catechin are the answer to a comprehensive Xerostomia Treatment.

### About Dr Stephen Hsu (B.S, M.A, PhD)

But let's back track a little and learn about the authority of Green Tea and the author of the Georgia Regents University Study. Why is Green Tea so important to him? Dr Stephen Hsu has a PhD in Cell Biology and Anatomy from the University of Cincinnati College of Medicine, and is a professor with tenure at the College of Dental Medicine, Georgia Regents University.

His passion with Green Tea began back in the tragic Chinese "Cultural Revolution" when he was separated from his family and forced as an 16 year old child to become a plantation farmer in rural China. After only starting his education at age 23 years, and immigrating to USA, he accumulated his undergraduate and many postgraduate degrees.

In 2004, he reported that the Green Tea Catechin EGCG could protect salivary gland cells from damage caused by gamma ray and chemo-drugs. That was the beginning of his understanding of the protective properties of EGCG/Green tea on salivary gland cells.

Dr Hsu developed the concept that damage to the salivary glands caused by inflammation, chemo-drugs, and radiation is mainly from reactive oxygen species (ROS), which induces DNA damage and repair work, leading to salivary dysfunction despite the cells still being alive. (3)

Dr Hsu believes this type of salivary dysfunction as partially reversible or restorable, in comparison to cells already died and replaced by scar tissue. Therefore he examined the "antioxidant defence enzymes" in the salivary gland to see if EGCG could keep the levels of these key defence enzymes up. This involved several years of animal and in vitro studies. These studies revealed that as ROS damage the salivary gland cell a crucial antioxidant defence enzyme, "peroxiredoxin 6", starts to decrease. (4)

Dr Hsu reported that EGCG helped increase these antioxidant defence enzymes as well as increasing key proteins p21 and p53 that the cell uses to stay healthy. (5)

Dr Hsu has undertaken over a decade of studies showing strong evidence and mechanisms in the protective role of EGCG on salivary gland cells. This decade of results and beliefs culminated in the 2013 study undertaken at Georgia Regents University (6), briefly mentioned above. I hope to discuss in detail this study in my next article.

Exciting news is that Dr Hsu's patent on Green tea Catechin EGCG is already available in Australia as part of a comprehensive range of Chewing Gum, Suckable Lozenges, Fluoride Mouthwash and Lubricating Lip Balm. ♦

You can obtain more information by contacting the author on 1300-653-335

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