

Dentyl Active®

A-Z Product Guide



Foreword

Professor Robin Seymour, Dr Carlos Werner and Jillian Eastmond

Over the last decade we continue to witness a significant increase in life expectancy. Hand in hand with this has been a decline in the number of people losing their teeth (edentulism). However, our oral care habits do not seem to be improving in the same manner and more people fail to control plaque levels. As a result, there are now many more cases of early gum disease and periodontal disease, which is a much bigger health worry than caries alone.

In fact, periodontal disease looks likely to become one of medicine's undercover agents. Not content with causing inflammation and damage to gums and alveolar bone loss, possibly leading to tooth loss; emerging research has demonstrated that the extent and severity of periodontal disease may be a risk factor for several systemic conditions, including coronary heart disease, adverse pregnancy outcomes and perhaps infertility.

As a result, people's poor plaque controls are still causing an ongoing headache for dental practitioners. This is why medical research continues to review and investigate supporting adjuncts to traditional mechanical methods of plaque control, toothbrushing, to see how such habits can control and cut the rise of early gum disease and periodontal disease.

The following brand guide looks at **Dentyl Active, the UK's only proven two phase alcohol free mouthwash**; its smart working action; the science behind Dentyl Active and the growing importance of using a daily **alcohol free** mouthwash, like Dentyl Active, to help control and tackle plaque levels. In addition, the guide includes summary review papers investigating periodontal disease and why the oral care health woes of the nation continue to grow, as well as putting toothbrushing under the spotlight.

DENTYL ACTIVE – THE FACTS

FACT 1: *Alcohol free Dentyl Active has a distinctive working action. The advanced alcohol free formula consists of two stages: a water-based phase incorporating a special antibacterial agent (Cetylpyridinium Chloride - CPC), and an oil-based solution with natural essential oils, that has to be shaken well before use.*

FACT 2: *This shaking action combines the two mouthwash phases and creates a dynamic solution which is much more powerful than the two individual parts. The bacteria and debris adhere to the mouthwash solution and when it is rinsed out you can see the bacteria, food debris and other deposits on the teeth removed and highlighted as small, brightly coloured masses in the sink, proving that Dentyl Active really works. And thanks to the special antibacterial ingredient CPC in Dentyl Active, it also helps stop bacteria from working¹.*

¹ Enhanced Antibacterial Activity of Cetylpyridinium Chloride in Oil: Water Mixtures; O. Ilan and M. Rosenberg; Tel-Aviv University, Israel; Journal of Dental Research 75 (5) 1996

Module 1

Dentyl – historical heritage

Developed by the world's leading expert in oral malodour, Professor Mel Rosenberg, Dentyl, today known as Dentyl Active, has been evolved by dental practitioners over the last 20 years and consequently has a very distinctive and unique working action. The advanced alcohol free formula consists of two stages, a water-based phase incorporating a special antibacterial agent (Cetylpyridinium Chloride - CPC), and an oil-based solution with natural essential oils, that has to be shaken well before use. This shaking action combines the two mouthwash phases and creates a dynamic solution which is much more powerful than the two individual parts. The bacteria and debris adhere to the mouthwash solution and when it is rinsed out you can **see the bacteria**, food debris and other deposits on the teeth removed and highlighted as small, brightly coloured masses in the sink, proving that Dentyl Active really works. No wonder today, Dentyl Active is loved and used by millions of people around the world.

Active Fact....Using the very latest ingredient technology, within a novel, advanced formulation; The Dentyl Active alcohol free mouthwash portfolio includes a range of product choices, all including proven, active ingredients to help keep people's mouths clean and healthy, no matter how active their lifestyle.

Meet some of our Dentyl Active experts

Dental science, supporting evidence and using the very latest oral care technology remains at the heart of the Dentyl Active brand and as a result, supporting dental practitioners in their quest to tackle daily oral care concerns is the clear backbone behind Dentyl Active.

That's why Dentyl Active is getting more active when it comes to seeking advice from dental professionals. Meet some of our experts who have helped develop our brand as well as exploring further the biggest threat to the nation's dental health – gum disease.

Module 1

The Dentyl Active expert panel includes:



Professor Robin Seymour

One of the world's leading periodontologists, Professor Robin Seymour has been, and continues to be, a leading author of many published academic papers and has a particular interest around periodontology and restorative dentistry. Professor Seymour was Head of School of Dental Sciences, Newcastle University from September 2002 until July 2009. Professor Seymour continues to lecture, teach and practice. He is now Emeritus Professor of Restorative Dentistry at Newcastle University and holds an Honorary Consultant position with the Newcastle Hospitals NHS Trust.



Carlos Werner

Passionate about dental public health, Dr Werner has been an active lecturer in Dental Public Health since 1994; Dr Werner currently works at the School of Dental Sciences - Newcastle University as a Senior Clinical Lecturer and Dental Public Health course leader. Dr Werner also works as a part-time associate General Dental Practitioner. Dr Werner started his dentistry career when graduating from Rio de Janeiro Federal University, acquiring an MSc in Dental Public Health from University College London and a doctorate in Public Health from the University of Michigan. As a result, Dr Werner is board certified in Dental Public Health in the UK (diploma RCS Eng), US (ADA) and Brazil (Federal Dental Council) as well as residency certificates in Dental Public Health and Geriatric Dentistry from the University of Texas. Academic works and publications cover the areas of Preventive Products, Dental Education, Geriatric Dentistry, Epidemiology and Planning of Preventive Dental Programmes.



Jillian Eastmond

CPD Training Coordinator for the Dental Nurse Education & Training Centre at King's College Hospital NHS Foundation Trust: An experienced teacher who delivers lectures ranging from National certificate and Post registration training, as well as CPD throughout the UK, training is close to Jillian's heart. Jillian's current role at King's College Hospital NHS Foundation Trust includes managing and delivering a range of learning opportunities from full post registration courses to one day seminars for the registered Dental Care Practitioner and their dental team. Jillian qualified as a Dental Nurse at Manchester Dental Hospital in 1994 and has worked in private and NHS practices as well as Dental Hospitals. Jillian has also worked as a specialist Dental Nurse in the Restorative department at Guys Dental Hospital. Jillian is a National and Oral Health Education examiner for the National Examining Board for Dental Nurses as well as a member of the NEBDN Certificate in Dental Radiography committee.

Module 2

Dentyl Active® – an active alcohol free mouthwash

New research, published in the British Dental Journal² by authors, Dr Werner and Professor Seymour advised all dental practitioners to recommend an alcohol free mouthwash as a daily adjunct to brushing. The same review paper noted that alcohol free mouthwashes provide the same superior oral care benefits - plaque and gingivitis control – as alcohol based mouthwashes, but without the need for ethanol (alcohol).

In fact the authors, Dr Werner and Professor Seymour, point out the link between the use of alcohol containing mouthwash and various health risks such as adverse effects on oral structures and functions. These include burning mouth, drying of the oral mucosa, softening effects on composite filling materials and mucosa pain, as well as worsening any damage caused by tobacco from cigarette smoking. Recent studies have indicated that alcohol is a risk factor for oral cancer, any efforts to reduce exposure of the oral mucosa to this substance should be encouraged³.

Dentyl Active® – overview

Alcohol free Dentyl Active is a scientifically proven two phase active mouthwash that can reduce plaque levels by 25%⁴ post brushing and has superior desorption properties⁵. Dentyl Active contains the special antibacterial ingredient Cetylpyridinium Chloride (CPC) which is an established, proven antiseptic. As a result, Dentyl Active

kills 99.9% oral bacteria⁶, removes plaque and food debris from the mouth⁷ and does not sting, burn or dry the mouth like so many other mouthwashes⁸. The Dentyl Active range can also efficiently remove bacterial layers from a solid surface⁹, such as teeth and the tongue, contributing to Dentyl's Active working action in the mouth.

² British Dental Journal, December 2009

³ Professor Seymour; data on file

⁴ International Journal of Dental Hygiene 6; 2008; 290-303

⁵ Bacterial Desorption by Commercial Mouthwashes vs. Two Phase Oil: Water Formulations; S. Goldberg and M. Rosenberg; Tel-Aviv University; published Biofouling, Vol 3, p. 193-198 (1991)

⁶ 2008 US independent laboratory trials

⁷ [i] Preliminary Investigation (Dentyl Mouthwash); The Lord Zuckerman Research Centre, Reading, UK; 3rd February 2005; [ii] Bacterial desorption by commercial mouthwashes vs. two-phase oil: water formulations; S. Goldberg, M. Rosenberg; Biofouling, 1991, Vol 3, pp193-198

⁸ Periodontology 2000, vol.48, 2008, 42-53pp

⁹ Enhanced Antibacterial Activity of Cetylpyridinium Chloride in Oil: Water Mixtures; O. Ilan and M. Rosenberg; Tel-Aviv University, Israel; Journal of Dental Research 75 (5) 1996

Module 2

Smart action....

The entire Dentyl Active mouthwash range has a smart working action. The active formula consists of two phases, a water-based antibacterial stage incorporating what some practitioners believe to be the next gold standard bacteria fighting ingredient, CPC, and an oil-based solution with natural essential oils that have to be shaken well before use.

This shaking action¹⁰ combines the two mouthwash stages and creates a dynamic cationic solution. The negatively charged bacteria and debris adhere to the positively charged mouthwash solution and are visible in the sink when rinsed out. Bacteria, together with food debris and other deposits on the teeth, are seen as small, brightly coloured masses in the sink, proving that as a mouthwash it has immediate results¹¹ and that it really works¹².

CPC and essential oils – working in active partnership

Emerging research¹ reviews are fast acknowledging the fact that a mouthwash containing essential oils; together with CPC appears to have a greater adjunctive benefit in terms of percentage plaque reduction when compared to those mouthwashes containing just CPC.

(¹: J Periodontol 2006, 77, 1380-1385: Haps S, Slot DE, Berchier CE, Van der Weijden GA, The effect of cetylpyridinium chloride as adjuncts to toothbrushing on plaque and parameters of gingival inflammation: a systematic review. Int J dent Hygiene, 2008, 6, 290-303)

¹⁰ Preliminary Investigation (Dentyl Mouthwash); The Lord Zuckerman Research Centre, Reading, UK; 3rd February 2005

¹¹ 2008 US independent laboratory trials

¹² Preliminary Investigation (Dentyl Mouthwash); The Lord Zuckerman Research Centre, Reading, UK; 3rd February 2005

Module 3

Dentyl Active® – an A-Z summary product guide

Using the very latest ingredient technology, within a novel, proven, advanced formulation, **The Dentyl Active alcohol free mouthwash** portfolio includes:

- **Dentyl Active® Complete Care** – works in six active ways to give you everything you need to complete your daily oral care regime, and is available in two popular flavours: Icy Mint and Icy Cherry.
- **Dentyl Active® Enamel Restore** – with double the fluoride level of other leading mouthwash brands (within recommendations), Dentyl Active Enamel Restore can help to strengthen tooth enamel by replacing lost minerals; help protect the enamel against acid erosion¹³ and help the enamel become more resistant to acid attack.

- **Dentyl Active® Ultra Cleanse™** – with bicarbonate of soda, that neutralises plaque acids to help protect tooth enamel and leave your mouth feeling deeply cleansed and extra fresh.
- **Dentyl Active® Plaque Fighter** – a unique active mouthwash containing three antibacterial agents and available in three popular flavours: Smooth Mint, Fresh Clove and Minty Citrus.

Dentyl Active® Complete Care

Dentyl Active Complete Care ‘works in 6 ways’, leaving users with a ‘professional’ clean feel around the mouth, as well as long lasting fresh breath for up to 18 hours¹⁴ post brushing. Dentyl Active Complete Care works in 6 active ways:

- **It destroys bacteria, especially plaque forming bacteria**, and helps to remove food debris and other deposits on the teeth from the mouth - all visible as small, brightly coloured masses you can see in the sink when the mouthwash is rinsed out from the mouth¹⁵. As a result, such action helps fight the build up of plaque deposits¹⁶.

- **It helps maintain healthy gums:** Cetylpyridinium Chloride (CPC), together with the essential oils eucalyptus and menthol, continues to demonstrate a greater adjunctive benefit in terms of percentage plaque reduction¹⁷. Such action, together with the superior desorption¹⁸ and active benefits of CPC when shaken and combined with the natural essential oils, all help to reduce oral plaque levels, vital for any user in their quest to help keep their mouths and gums healthy.

¹³ Data on file

¹⁴ Temporary aqueous emulsions containing oil (n-hexadecane; 20% v/v) and CPC (0.05%) were applied to test tubes (N=4) and to crown sections of human teeth (N=8) and then poured off. The residual antibacterial activity was assayed by measuring the outgrowth of added suspensions of Escherichia coli, as compared with appropriate controls. Control test tubes, to which either an aqueous solution of CPC alone or a water: oil mixture without CPC had been applied, exhibited little or no inhibitory effect (<3 hours). In contrast, test tubes containing the residue of the temporary emulsion with both CPC and oil inhibited outgrowth for 18 hours. Similarly, crown sections immersed in the CPC/oil emulsion inhibited outgrowth by 24%, as compared with 4% and 9% for the controls lacking either oil or CPC, respectively. Spectrophotometric measurements confirmed release of CPC from oil droplets over time. The results suggest that oil: water mixtures containing CPC enhance the activity of the antibacterial agent, presumably by prolonging its release over time. (Reference: O. Ilan and M. Rosenberg, Tel-Aviv University, Ramat Aviv, Israel)

¹⁵ 2008 US independent laboratory trials; Preliminary Investigation (Dentyl Mouthwash); The Lord Zuckerman Research Centre, Reading, UK; 3rd February 2005

¹⁶ J Periodontol 2006, 77, 1380-1385; Haps S, Slot DE, Berchier CE, Van der Weijden GA, The effect of cetylpyridinium chloride as adjuncts to toothbrushing on plaque and parameters of gingival inflammation: a systematic review. Int J dent Hygiene, 2008, 6, 290-303; Bacterial Desorption by Commercial Mouthwashes vs. Two Phase Oil: Water Formulations; S. Goldberg and M. Rosenberg; Tel-Aviv University; published Biofouling, Vol 3, p. 193-198 (1991); 2008 US independent laboratory trials

¹⁷ J Periodontol 2006, 77, 1380-1385; Haps S, Slot DE, Berchier CE, Van der Weijden GA, The effect of cetylpyridinium chloride as adjuncts to toothbrushing on plaque and parameters of gingival inflammation: a systematic review. Int J dent Hygiene, 2008, 6, 290-303

¹⁸ Bacterial Desorption by Commercial Mouthwashes vs. Two Phase Oil: Water Formulations; S. Goldberg and M. Rosenberg; Tel-Aviv University; published Biofouling, Vol 3, p. 193-198 (1991-2008 US independent laboratory trials)

Module 3

Dentyl Active® Complete Care

- **It kills up to 99.9% oral bacteria¹⁹:**

Results of a kill kinetic study of five bacteria typically found in the mouth after 30 seconds of exposure to six test products containing CPC, verified that Dentyl Active demonstrated nearly complete antimicrobial activity against the organisms tested, with greater than 99% kill rate observed for all organisms when exposed to the mouthwash.

- **It contains fluoride at 0.05% to help fight dental decay:**

A mouth rinse containing either 0.05% sodium fluoride (230 ppm F) for daily use, or 0.2% sodium fluoride (900 ppm F) for weekly use has been shown to reduce dental decay in adult teeth by 26%²⁰.

- **Is alcohol free and does not sting or dry the mouth.**

As a result of being alcohol free, and thanks to the natural essential oils in Dentyl's formulation, Dentyl Active Complete Care has a pH level similar to that of saliva²¹ and also creates a long-term reduction of microbial levels²².

- **It provides long lasting fresh breath with Zabactyl™ and Menthol:**

Studies have demonstrated that two-phase oil: water mouth rinses containing Cetylpyridinium Chloride (CPC) exhibit long-term reduction of microbial levels and malodour scores. This has been attributed to the ability of the oil droplets to bind and remove oral micro-organisms and debris, as well as CPC over time having an antibacterial action²³.

In addition, Zabactyl, helps inhibit bacteria from producing VSCs (Volatile Sulphur Compounds) which cause bad breath while Menthol²⁴, ensures a longer, lasting flavour is left in the mouth, aiding fresh breath.



¹⁹ 2008 US independent laboratory trials

²⁰ Marinho VC, Higgins JP, Logan S, Sheiham A: Fluoride mouthrinses for preventing dental caries in children and adolescents; Cochrane Database Syst Rev 2003

²¹ Data on file

²² Effects of a two phased oil: water mouthwash on halitosis – Clinical Preventive Dentistry, Vol 14, No 1; Jan/Feb 1992

²³ Temporary aqueous emulsions containing oil (n-hexadecane; 20% v/v) and CPC (0.05%) were applied to test tubes (N=4) and to crown sections of human teeth (N=8) and then poured off. The residual antibacterial activity was assayed by measuring the outgrowth of added suspensions of Escherichia coli, as compared with appropriate controls. Control test tubes, to which either an aqueous solution of CPC alone or a water: oil mixture without CPC had been applied, exhibited little or no inhibitory effect (<3 hours). In contrast, test tubes containing the residue of the temporary emulsion with both CPC and oil inhibited outgrowth for 18 hours. Similarly, crown sections immersed in the CPC/oil emulsion inhibited outgrowth by 24%, as compared with 4% and 9% for the controls lacking either oil or CPC, respectively. Spectrophotometric measurements confirmed release of CPC from oil droplets over time. The results suggest that oil: water mixtures containing CPC enhance the activity of the antibacterial agent, presumably by prolonging its release over time. (Reference: O. Ilan and M. Rosenberg, Tel-Aviv University, Ramat Aviv, Israel)

²⁴ Hur MH, Park J, Maddock-Jennings W et al. Reduction of mouth malodour and volatile sulphur compounds in intensive care patients using an essential oil mouthwash; Phytother Res 2007 Jul; 21(7): 641-3

Dentyl Active® Enamel Restore

With the same distinctive working action as the rest of the Dentyl Active range, **Dentyl Active® Enamel Restore** contains double the fluoride level of other leading mouthwash brands (within recommendations) and has an exhilarating icy fresh mint flavour. As a result, this means that **Dentyl Active® Enamel Restore** can:

- Help to strengthen tooth enamel by replacing lost minerals.
- Help protect the enamel against acid erosion²⁵.
- Help the enamel become more resistant to acid attack.

Dentyl Active Enamel Restore's unique alcohol free formula means that children can use it to help protect their teeth from acid erosion and enamel decay from as young as seven years of age, unlike alcohol containing mouthwashes, which cannot be used until the age of 12. Great news for kids, especially as the number of children with decay increases by 16% from the age of 8 to 12 years of age²⁶.

Dentyl Active® Enamel Restore Icy Fresh Mint works in the following ways:

- Has the ability to lift and absorb 99.9% of oral bacteria²⁷, plus debris, such as food particles, bacteria and plaque from the mouth²⁸. Like the rest of the Dentyl Active range, **Dentyl Active® Enamel Restore** consists of two phases, which when shaken and used, the bacteria and debris adhere to the mouthwash solution. When the mouthwash is rinsed out you can **see the bacteria**, food debris and other deposits on the teeth removed and highlighted as small, brightly coloured masses in the sink. And thanks to the special antibacterial ingredient (CPC) in Dentyl Active, it also helps stop bacteria from working²⁹.
- **It provides long-lasting breath freshness³⁰.**
- **Is alcohol free and does not sting or dry the mouth³¹.**

ACTIVE FACTS:

- *Enamel erosion is on the increase, and this is partly due to modern day eating and drinking habits. Acid, which is primarily found in soft drinks, sports drinks, juices, wine and acidic foods can cause a chemical loss of minerals to the tooth enamel causing it to erode.*
- *Research has shown that carbonated drinks can double or triple the incidence of tooth decay*.*
- *Fluoride has an important role to play to help prevent enamel erosion as it hardens the outer layer of teeth, making it more difficult for bacteria to penetrate the enamel*.*

*www.drinksdestroyteeth.com
*eHow.com



²⁵ Reference on file

²⁶ National Statistics – 2003 Children's Dental Health Survey (conducted every 10 yrs)

²⁷ 2008 US independent laboratory trials

²⁸ Preliminary Investigation (Dentyl Mouthwash); The Lord Zuckerman Research Centre, Reading, UK; 3rd February 2005

²⁹ Enhanced Antibacterial Activity of Cetylpyridinium Chloride in Oil: Water Mixtures; O.Ilan and M.Rosenberg; Tel-Aviv University, Israel; Journal of Dental Research 75 (5) 1996

³⁰ Effects of a two phased oil: water mouthwash on halitosis – Clinical Preventive Dentistry, Vol 14, No 1; Jan/Feb 1992

³¹ Periodontology 2000, vol.48, 2008 pp 42-53

Module 3

Dentyl Active® Ultra Cleanse™

Great tasting Dentyl Active Ultra Cleanse with bicarbonate of soda helps neutralise plaque acids, ensures a deep clean and leaves the mouth feeling deeply cleansed and extra fresh. Available in Fresh Mint flavour.

Dentyl Active Ultra Cleanse works in the following ways:

- It destroys bacteria, especially plaque forming bacteria, together with food debris and other deposits on the teeth from the mouth³². Such active action helps fight the build up of plaque deposits³³, which if left cause bleeding gums, bad breath and gingivitis, including gum inflammation, the first signs of gum disease.
- It kills up to 99.9% oral bacteria³⁴.
- It provides long-lasting breath freshness³⁵.
- Is alcohol free and does not sting or dry the mouth³⁶.

Bicarbonate of Soda - The Facts

- The ancient Egyptians first used this clever ingredient as a body and tooth scrub and to ward off body smells.
- It has a host of anti-fungal properties.
- It is clinically recognised as a very powerful cleaning agent, dissolving deep into tooth surface crevices when used in the mouth.



The Dentyl Active panel says....Bicarbonate of soda is not only proven to help provide a deep cleaning action, but it will neutralise destructive plaque acids. These acids not only cause tooth decay, they can also contribute to the development and progression of gum disease. If plaque acids are not controlled there is an increased risk of tooth decay and gum disease leading to premature tooth loss."

Despite the superior cleaning powers of bicarbonate of soda, it remains non-abrasive and very gentle, making it ideal for daily dental use. It can also help to maintain a good pH balance inside the mouth because it neutralises acids and so keeps breath fresh for hours.

Fact - 83% of Dentyl Active Ultra Cleanse trialists said the mouthwash left their mouths feeling deeply cleansed and extra fresh³⁷.

Dentyl Active® Plaque Fighter

Viewed as no ordinary mouthwash by dental practitioners, Dentyl Active Plaque Fighter Smooth Mint, Fresh Clove and Minty Citrus are unique active mouthwashes containing three antibacterial agents, Cetylpyridinium Chloride, Triclosan and Peppermint oil³⁸. As a result, Dentyl Active Plaque Fighter actively:

- Kills up to 99.9% oral bacteria³⁹.
- Destroys bacteria, especially plaque forming bacteria, and helps remove food debris and other deposits from teeth and gums⁴⁰.
- Provides long-lasting fresh breath⁴¹.
- Is alcohol free and does not sting or dry the mouth⁴².



³² 2008 US independent laboratory trials; Preliminary Investigation (Dentyl Mouthwash); The Lord Zuckerman Research Centre, Reading, UK; 3rd February 2005

³³ J Periodontol 2006, 77, 1380-1385: Haps S, Slot DE, Berchier CE, Van der Weijden GA, The effect of cetylpyridinium chloride as adjuncts to toothbrushing on plaque and parameters of gingival inflammation: a systematic review. Int J dent Hygiene, 2008, 6, 290-303; Bacterial Desorption by Commercial Mouthwashes vs. Two Phase Oil: Water Formulations; S. Goldberg and M. Rosenberg; Tel-Aviv University; published Biofouling, Vol 3, pp 193-198 (1991); 2008 US independent laboratory trials

³⁴ 2008 US independent laboratory trials

³⁵ Effects of a two phased oil: water mouthwash on halitosis – Clinical Preventive Dentistry, Vol 14, No 1; Jan/Feb 1992

³⁶ Periodontology 2000, vol.48, 2008, pp 42-53

³⁷ BCM consumer claims test June 2009; data on file

³⁸ Data on file

³⁹ 2008 US independent laboratory trials

⁴⁰ 2008 US independent laboratory trials; Preliminary Investigation (Dentyl Mouthwash); The Lord Zuckerman Research Centre, Reading, UK; 3rd February 2005

⁴¹ Effects of a two phased oil: water mouthwash on halitosis – Clinical Preventive Dentistry, Vol 14, No 1; Jan/Feb 1992; O. Ilan and M. Rosenberg, Tel-Aviv University, Ramat Aviv, Israel

⁴² Periodontology 2000, vol.48, 2008, pp 42-53

Module 4

Evidence to support the efficacy of Dentyl Active®

Dentyl Active has conducted a series of independent studies to demonstrate the benefits of this smart, active mouthwash. The studies completed so far have confirmed the antibacterial activity of Cetylpyridinium Chloride (CPC) in an essential oil suspensor, as well as **Dentyl Active's ability to eradicate 99.9% oral bacteria**. Most of the studies are in vitro. The other area that has been

investigated relates to the efficacy of Dentyl Active on reducing malodour. A further clinical study (Rosenberg et al 1992) has also shown that two-phase oil: water mouthwash can bring about a significant decrease in volatile sulphides and reduced microbial levels. Below is a quick summary guide, detailing some of these trial findings.

Study 1

Investigation into antimicrobial activity of Dentyl mouthwash; research conducted by - The Lord Zuckerman Research Centre; (dated 10/01/05)

Background: An analytical study by The Lord Zuckerman Research Centre reviewed the antimicrobial effect of Dentyl mouthwash.

The study: Two study methods were adopted;

- Suspension test to show that the sample possesses an inherent antimicrobial effect (in Vitro)
- Total counts to show that the sample reduces the level of micro-organisms in the mouth (in Vivo)

Study findings: The study test revealed a significant reduction in the level of viable micro-organisms expelled within saliva in to the mouthwash, compared to the level expelled in saliva in the presence of water. This suggests that the mouthwash is having an anti-microbial effect on the normal flora present in the mouth.

Study 2

Two-phase mouthwash formulations for treatment of oral malodour; Authors -O.Ilan; A.Kozlovsky, S.Goldberg, E.I. Weiss and M.Rosenberg. pp. 265-274.

In bad breath: A multidisciplinary approach; D.van Steenberghe and M.Rosenberg (eds). Leuven University Press, Leuven, Belgium; (1996)

Background: Previous research has demonstrated that two-phase oil: water mouth rinses containing Cetylpyridinium Chloride exhibit long-term reduction of microbial levels and malodour scores. This has been thanks to the ability of the oil droplets to bind and remove oral micro-organisms and debris. In this study, carried out by Ilan and Rosenberg, the effect of Dentyl mouthwash and how it keeps breath fresh for 18 hours was reviewed.

The study: Testing the effectiveness of the Cetylpyridinium Chloride (CPC) element of Dentyl mouthwash was done with the use of control test tubes. Two samples were used – one with aqueous solution of CPC alone, and another with a water: oil mixture without CPC. The latter exhibited little or no inhibitory effect whereas the test tube containing the residue of the temporary emulsion with both CPC and oil inhibited outgrowth for 18 hours.

Study findings: The results of this study demonstrated that oil: water mixtures containing CPC enhance the activity of the antibacterial agent by prolonging its release over time. The vital ingredient element is Cetylpyridinium Chloride (CPC), which was proven to exhibit long-term reduction of microbial levels and malodour scores. This has been attributed to the ability of the oil droplets to bind and remove oral micro-organisms and debris.

Module 4

Study 3

Effects of a two-phase oil: water mouthwash on halitosis – Clinical Preventive Dentistry; Authors - Ken Yaegaki, DDS, PhD and Kazou Sanada, DDS DDSc+; Clinical Preventive Dentistry, Vol. 14, No 1; Jan/Feb 1992

Background: Two-phase explained: Dentyl is a two-phase oil: water mouthwash which has been developed to remove oral micro-organisms. The oil phase consists of essential oils, which includes olive oil. The aqueous phase includes Cetylpyridinium Chloride, which is a disinfectant that

promotes the adhesion of micro-organisms to oil droplets.

The study: This study was put into place to determine the effects of Dentyl on the production of volatile sulphides both in vivo and in vitro.

Study findings: A reduction of 80% sulphide was observed with using a two-phase mouthwash, compared to 30% when other commercial mouthwashes were used. The clinical test concluded that the two-phase mouthwash, Dentyl, strongly inhibits the production of volatile sulphides.

Study 4

Assessing the antimicrobial properties of Dentyl pH mouthwash when challenged with bacteria commonly found in the oral cavity; December 2008; independent data on file

Background: The following study determined the effects of Dentyl on organisms commonly associated with gingivitis using a kill kinetics model in vitro.

Kill kinetics explained: The kill kinetics model used in this in vitro study evaluates the hostility of a mouthwash containing a high bioavailable Cetylpyridinium Chloride (CPC) to five organisms commonly associated with plaque and gingivitis (Candida Albicans, Actinomyces Viscosus,

Streptococcus Sanguinis, Salmonella Typhimurium and Protella Intermedia). The kill kinetics assay is based on the time taken by the test product to kill the representative micro-organism.

Study findings: The study data revealed that 99.9% of germs were killed after 30 seconds of exposure when various formulas of Dentyl containing 0.065% to 0.07% CPC were used.

The clinical test concluded that six different formulas of the two-phase mouthwash Dentyl each kill 99.9% of five key bacteria commonly found in the mouth and associated with plaque and gingivitis after just 30 seconds, indicating that Dentyl could be effective in the treatment and prevention of gingivitis.

Study 5

Bacterial desorption by commercial mouthwashes Vs two-phase oil: water formulations; Authors - S. Goldberg and M. Rosenberg Research Centre - The Maurice and Gabriela Goldschleger School of Dental Medicine and Department of Human Microbiology, Sackler Faculty of Medicine, Tel-Aviv University, Ramat-Aviv, 69978, Tel-Aviv, Israel; published Biofouling, 1991, Vol 3, p. 193-198

Background: During the past eight years various investigators have shown oral micro-organisms tend to have hydrophobic surface properties. Most oral micro-organisms isolated directly from the oral cavity, as well as many oral laboratory strains, adhere to oil droplets.

The study: Building on past investigations regarding oral micro-organisms, this study investigated the bacterial desorption qualities of various commercial mouthwashes versus a two-phase oil: water formulation - Dentyl.

Study findings: The study data revealed that certain concentrations of cationic antibacterial agents i.e. Cetylpyridinium Chloride (CPC) and Chlorhexidine (CHX) promote binding of oral and other micro-organisms to oil droplets. This has resulted in the development of novel aqueous: oil mouthwashes containing CPC and/or CHX. In a comparison it was found that oil: water mouthwashes had desorption properties far superior to commercial mouthwashes.

Study 6

Day-long reduction of oral malodour by a two-phase oil: water mouthrinse as compared to Chlorhexidine and placebo rinses; Authors: M. Rosenberg, I. Gelernter, M. Barki, and R. Barness; Journal of Periodontal 1992; 63:39-43

Background: Few scientific investigations have addressed the ability of mouthrinses to reduce oral malodour for periods longer than three hours. The following study was put into place to determine the effect that a two-phase mouthwash, a Chlorhexidine and a placebo based mouthwash would have on malodour scores three or more hours after rinsing.

The study: In this study, sixty dental students were divided randomly into three groups and instructed to use one of the rinses prior to bedtime and the following morning. Measurements carried out eight to ten hours following rinsing were compared with baseline measurements from the previous day.

Study findings: The results found that Chlorhexidine and two-phase mouthrinse were highly effective in reducing microbial levels as measured by the rinsing technique. The data showed that day long reduction of malodorous sulphides and microbial levels by a two-phase mouthrinse extend previous vitro studies and thus demonstrate its potent microbial desorption properties. This type of study provides the first evidence for its potential clinical efficacy.

Study 7

Managing halitosis with CPC mouthwashes; Author: C Scully, S Porter, J Greenman; (2006)

Background: People who refrain from cleaning their mouths soon develop halitosis, but any form of oral sepsis can produce appreciable malodour, the most common condition being inflammatory, plaque related gingival disease (gingivitis) or periodontal disease (periodontitis).

The study: The amounts of volatile sulphur compounds and the ratio of Methylmercaptan to Hydrogen Sulphide are higher in the mouth air from a patient with periodontal disease than in that from people with healthy mouths. The source of these compounds is mainly from the gingival crevice, periodontal pockets and the tongue coating. As a result, this study investigated the management of halitosis with CPC containing mouthwashes.

Study findings: The study found that most reliable management in reducing oral flora, particularly anaerobes, is best achieved by improving oral hygiene i.e. brushing teeth, cleaning between the teeth and other means. A simple and effective treatment is to use a mouthrinse of 0.2% aqueous Chlorhexidine Gluconate, which is remarkably active against a range of organisms in dental plaque and can also reduce halitosis. Various other products designed to reduce halitosis are under development. For example Cetylpyridinium Chloride and a two-phase oil-water mouthwash containing olive oil and other essential oils reduce volatile sulphur compounds in the breath.

Module 5

Frequently asked questions and answers about Dentyl Active®

Q. Is the Dentyl Active range not just a gimmick?

A. Alcohol free Dentyl Active is a scientifically proven two phase active mouthwash that can reduce plaque levels by 25% post brushing⁴³ and has superior desorption properties⁴⁴. Unlike other mouthwashes, Dentyl Active contains the special antibacterial ingredient Cetylpyridinium Chloride (CPC). As a result, it kills 99.9% oral bacteria⁴⁵, and helps to remove plaque and food debris from the mouth⁴⁶ and does not sting, burn or dry the mouth like so many other mouthwashes. The Dentyl Active range can also efficiently remove bacterial layers from a solid surface⁴⁷ such as teeth and the tongue, contributing to Dentyl's working action in the mouth.

Dentyl Active must be shaken well before use so that the water-based antibacterial stage, CPC and the natural

essential oils⁴⁸ combine, creating a dynamic cationic solution. The negatively charged bacteria and debris adhere to the positively charged mouthwash solution and are visible when rinsed out. Bacteria, together with food debris and other deposits on the teeth, are all visible as small, brightly coloured masses you can see in the sink, proving that as a mouthwash it has immediate results⁴⁹ and that it really works⁵⁰.

Active fact... The essential oils, together with the antibacterial ingredient - Cetylpyridinium Chloride, in Dentyl Active have been shown to reduce microbial levels and bacteria causing bad breath for hours after using the rinse.

Q. How does Dentyl Active really remove debris from the mouth?

A. Dentyl Active must be shaken first prior to use. This action causes the natural essential oils in the mouthwash to mix with Cetylpyridinium Chloride (CPC), in the water phase. The result is an 'emulsion' which is cationic (positively charged) and reacts with the anionic bacteria (negatively charged) in the mouth, which adheres

to the oil droplets in the emulsion and is expelled when expectorated. So, Dentyl Active when swished and gargled around the mouth, can attract and lift the bacteria and debris. These are then visible as small masses in the expectorated rinse in the sink⁵¹.

⁴³ International Journal of Dental Hygiene 6; 2008; 290-303

⁴⁴ Bacterial Desorption By Commercial Mouthwashes vs. Two Phase Oil: Water Formulations; S. Goldberg and M. Rosenberg; Tel-Aviv University; published Biofouling, Vol 3, p. 193-198 (1991)

⁴⁵ 2008 US independent laboratory trials

⁴⁶ [i] Preliminary Investigation (Dentyl Mouthwash); The Lord Zuckerman Research Centre, Reading, UK; 3rd February 2005; [ii] Bacterial desorption by commercial mouthwashes vs. two-phase oil: water formulations; S. Goldberg, M. Rosenberg; Biofouling, 1991, Vol 3, pp193-198

⁴⁷ Enhanced Antibacterial Activity of Cetylpyridinium Chloride in Oil: Water Mixtures; O. Ilan and M. Rosenberg; Tel-Aviv University, Israel; Journal of Dental Research 75 (5) 1996

⁴⁸ Preliminary Investigation (Dentyl Mouthwash); The Lord Zuckerman Research Centre, Reading, UK; 3rd February 2005

⁴⁹ 2008 US independent laboratory trials

⁵⁰ Preliminary Investigation (Dentyl Mouthwash); The Lord Zuckerman Research Centre, Reading, UK; 3rd February 2005

⁵¹ [i] Preliminary Investigation (Dentyl Mouthwash); The Lord Zuckerman Research Centre, Reading, UK; 3rd February 2005; [ii] Bacterial desorption by commercial mouthwashes vs two-phase oil: water formulations; S Goldberg, M Rosenberg; Biofouling, 1991, Vol 3, pp193-198

Q. Does Dentyl Active have an extended formula action and how long does it work for?

A. Yes. This is because Dentyl Active contains the antibacterial ingredient Cetylpyridinium Chloride plus essential oils, such as Clove and Menthol. In studies these ingredients, when combined together, have been shown to reduce microbial levels and bacteria causing bad breath for many hours after use with Dentyl Active.

In addition, Dentyl Active Complete Care includes Zabactyl and Menthol. As a result, Dentyl Active Complete Care has a triple defence action, which inhibits smelly compounds and kills and helps remove bacteria. This is all thanks to:

- Zabactyl, which inhibits bacteria from producing VSCs (Volatile Sulphur Compounds) which cause bad breath.
- Menthol, which ensures a longer lasting flavour is left in the mouth, aiding fresh breath.

Q. Is Dentyl Active acidic?

A. No. Dentyl Active has the same pH balance levels as saliva. This is thanks to the product's formulation being alcohol free and containing essential oils, plus the vital antibacterial ingredient Cetylpyridinium Chloride (CPC).

So, Dentyl Active's formulation works as a balancing agent in the mouth, creating a long-term reduction of microbial levels and malodour scores.

Q. As Dentyl Active is two coloured, does it stain your teeth?

A. No. As the mouthwash is a water and oil based formula, it is non-staining and is kind to your teeth, mouth and gums. Dentyl Active contains the recommended amount of CPC at 0.05%. CPC is a powerful antibacterial agent, the prolonged use of which, under certain circumstances

in conjunction with tea, coffee, red wine consumption or any strongly coloured food, can stain any plaque that remains on the teeth. It is recommended that people should wait for 30 minutes after using a mouthwash before consuming any coloured food or drink.

Module 5

Q. Why does it say "alcohol free" on the Dentyl Active bottles when there is Menthol in the mouthwash?

A. The menthol used in Dentyl Active is a natural essential oil and is not from an alcohol derivative or source. This is why all Dentyl Active mouthwashes are **alcohol free**. The menthol used in Dentyl is there to aid a minty taste,

help with curbing bad breath as well as playing an active antibacterial agent with Cetylpyridinium Chloride – CPC - in the mouthwash.

Q. Can new alcohol free Dentyl Active Enamel Restore really help protect against acid attack?

A. Yes. Fluoride plays a vital role in helping to protect against enamel erosion as it hardens the outer layer of teeth, making it more difficult for bacteria to penetrate the enamel⁵². Dentyl Active Enamel Restore contains double the fluoride level of other leading mouthwash brands (within

recommendations). As a result, thanks to these fluoride levels in Dentyl Active Enamel Restore, it can help to strengthen tooth enamel by replacing lost minerals; help protect the enamel against acid erosion⁵³ and help the enamel become more resistant to acid attack.

⁵² www.drinksdestroyteeth.com; eHow.com

⁵³ Reference on file

Module 6

The following section features a number of summary articles from a general review of the UK's poor brushing habits to the general role of mouthwashes. To see each of the papers in full, log on to www.dentylactive.com

Toothbrushing – under the spot light Urgent call for patients to use an alcohol free mouthwash twice daily with brushing

*Professor Seymour, Professor of Restorative Dentistry,
School of Dental Sciences, Newcastle University*

Abstract: Evidence from the last Adult Dental Health Survey (2009) revealed that 69% of participants had visible plaque or calculus present on their teeth⁵⁴, and although 75% of adults declared that they brushed their teeth twice a day, they still left plaque on 58% of their tooth surfaces. Those who brushed only once a day left plaque on 87% of their tooth surfaces. So adults are keeping their teeth longer, but are not cleaning them appropriately. This explains the high level of periodontal disease in the UK's adult population. Only 34% have used a method of interproximal cleaning, with flossing being the most widespread method of cleaning in between the teeth.

Flossing is more popular with women than men and also with young adults. However, only 2-20% floss regularly. There has been an increase in mouthwash usage with 31% of the sample reporting regular use of an antiseptic mouthwash compared to 23% in 1999. These changes in plaque control and oral health may be a reflection on the increase in advice that is now being offered to patients from Dentists and other members of the dental team.

Using an alcohol free mouthwash twice daily can help to maintain the health of the periodontal tissues and reduce plaque levels substantially without health concerns associated with the ethanol constituent. Several studies have shown that the alcohol content of mouthwashes does not improve the efficacy of the product.

⁵⁴ UK Adult Dental Health Survey, 2009. The Health and Social Care Information Centre

Module 6

Periodontal disease – the health concerns continue to grow

Professor Seymour, Professor of Restorative Dentistry, School of Dental Sciences, Newcastle University

Abstract: New research shows a clear link between the extent and severity of periodontal disease as a risk factor for many systemic diseases, particularly coronary heart diseases (CHD) and adverse pregnancy outcomes. One systematic review⁵⁵ of 15 studies concluded that both the prevalence and incidence of CHD are significantly increased in patients with periodontal disease. Many mechanisms have been suggested to explain the risk, including periodontal disease inducing an increase in white blood cells, fibrinogen and C-reactive protein (CRP). Although interventional studies would provide a more conclusive argument, periodontal intervention and radical treatment does reduce levels of C-reactive protein⁵⁶. Plaque has also been shown to induce platelet aggregation and pathogens derived from bacterial plaque have been found in aortic and heart endothelial cells. Inflammation arising from periodontal disease can cause hyperlipidemia and also change the nature of cholesterol, making it more likely to be involved in atheroma formation. Non-surgical periodontal treatment has been shown to have a significant effect on endothelial function and the ability of blood vessels to recover from temporary occlusion⁵⁷. Separately, a review of studies on the extent and severity of

periodontal disease as a risk factor for an adverse pregnancy outcome⁵⁸ found that 18 showed that periodontal disease was a significant risk, with seven showing no association. Of six interventional studies, four showed that periodontal intervention reduces the prevalence of pre-term low birth weight babies, with one showing that this can reduce the risk by as much as 50%. This suggests that during pregnancy clear advice and intervention should be given to both prevent and treat any periodontal problem.

More recent evidence suggests that the extent and severity of periodontal disease may have an impact upon fertility. Men with periodontitis have been shown to have poor sperm motility when compared with those with periodontally healthy teeth⁵⁹. It has also been reported that females with poor periodontal health take longer to conceive than those with healthy periodontium.

With children as young as 13 showing signs of gum disease, all these studies emphasise the importance of oral health in relation to a wide range of systemic conditions. With people's toothbrushing regimes not very effective at plaque removal, using an alcohol free mouthwash twice daily, together with brushing, can help to sustain and maintain the health of the periodontal tissues.

⁵⁵ Bahekar AA, Singh S, Saha S, et al. The prevalence and incidence of coronary heart disease is significantly increased in periodontitis: a meta-analysis. *Am Heart J* 2007; 154: 830-7

⁵⁶ Ellis JS, Averley PA, Preshaw PM, et al. Change in cardiovascular risk status after dental clearance. *Br Dent J* 2007; 202: 543-4. Taylor BA, Tofler GH, Carey HM, et al. Full mouth tooth extraction lowers systemic inflammatory and thrombotic markers of cardiovascular risk. *J Dent Res* 2006; 85: 74-8

⁵⁷ Tonetti et al, *New England Journal of Medicine*, 2007

⁵⁸ Xiong XU, Buekens P, Vastardis S, Yu SM. Periodontal disease and pregnancy outcomes: state of the science. *Obstet Gynecol Surv* 2007; 62: 605-15

⁵⁹ Klinger A, Hain B, Yaffe H, Schonberger O. Periodontal status of males attending an in vitro fertilization clinic. *J Clin Periodont*. 2011, 38, 542-6

Mouthwashes as adjuncts to mechanical plaque control

Professor R.A.Seymour

Abstract: Mouthwashes containing Chlorhexidine (CHX) have been regarded as the “gold standard”⁶⁰ but other antiseptic agents have been widely used as adjuncts to mechanical plaque removal including essential oils and Cetylpyridinium Chloride (CPC). The plaque inhibitory properties of both antiseptics have been recently evaluated in two systematic reviews^{61,62}, with both confirming the additional adjunctive benefit of mouthwash use over conventional mechanical plaque removal. Mouthwashes containing essential oils appear to have a greater adjunctive benefit in terms of percentage plaque reduction when compared to those just containing CPC and have also

been shown to be as effective as dental floss in controlling interproximal plaque and gingivitis^{63,64}. Similarly, twice-daily use of a 0.1% CPC mouthwash with 0.025% sodium fluoride resulted in higher interproximal plaque reductions than daily flossing⁶⁵. Many mouthwashes contain alcohol (ethanol), which serves as a solvent for some of the active ingredients. Such mouthwashes have been associated with an increased risk of oral cancer⁶⁶, although this claim has been refuted⁶⁷. A recent paper in the British Dental Journal reviewing this issue⁶⁸ concluded that there is evidence to show an association between the use of mouthwashes containing alcohol and oral cancer, while clinical trials have shown that there is no additional benefit arising from the alcohol content in terms of plaque and gingivitis reduction.

Periodontal disease and orthodontics

Professor R.A.Seymour

Abstract: The demand for orthodontic treatment is increasing but this should be matched with an increased expectation of good oral hygiene and plaque removal as any factor that can impede adequate oral hygiene, including orthodontic appliances, is likely to increase the risk of gingival and periodontal problems. Fixed appliances allow for greater flexibility in tooth movement and, as the appliance is fixed to the tooth surface, this improves compliance with orthodontic therapy. However, any attachments to the tooth surface can encourage plaque accumulation and prove to be physical barriers to tooth brushing and other means of mechanical plaque control. Also, compared to removable appliances, fixed appliances encourage more plaque and calculus formation on the lingual tooth surfaces⁶⁹. So before any form of orthodontic

treatment is undertaken, patients should have a full periodontal screening and those with poor oral and gingival health may be excluded from such treatment. It is also essential to emphasise the importance of good plaque control throughout the orthodontic treatments and those patients who show poor compliance may have their treatment aborted. Many patients may benefit from a thorough oral hygiene programme with the emphasis on good mechanical plaque removal including: thorough brushing, twice daily, of all tooth surfaces and brace areas around the mouth; daily flossing or use of an interdental brush to reach those tight mouth/brace ‘spot’ areas; and rinsing with an antibacterial mouthwash, preferably alcohol free, such as Dentyl Active. Dentyl Active also lifts and absorbs food debris and plaque from around the mouth, leaving the mouth with a fresh, professional, clean, feeling.

⁶⁰ Jones CG. Chlorhexidine, is it still the gold standard? *Periodontology* 2000, 1997, 15, 55-62

⁶¹ Stoeken JE, Paraskevas S, Van der Weijden GA. The long-term effect of a mouthrinse containing essential oils on dental plaque and gingivitis: a systematic review (*J Periodontol* 2006, 77, 1380-1385)

⁶² Haps S, Slot DE, Berchier CE, Van der Weijden GA. The effect of cetylpyridinium chloride as adjuncts to toothbrushing on plaque and parameters of gingival inflammation: a systematic review. *Int J dent Hygiene*, 2008, 6, 290-303

⁶³ Bauroth K, Charles CH, Mankodi SM, et al. The efficacy of an essential oil antiseptic mouthrinse versus dental floss in controlling interproximal gingivitis; a comparative study. *J Am Dent Assoc*, 2003, 134, 359-365

⁶⁴ Sharma NC, Charles CH, Qaqish JG, et al. Comparative effectiveness of an essential oil mouthrinse and dental floss in controlling gingivitis and plaque. *Am J Dent*, 2002, 15, 351-355

⁶⁵ Zimmer S, Kolbe C, Kaiser G et al. *J Periodontol* 2006,77, 1380-1385

⁶⁶ McCullough MJ, Farah CS. The role of alcohol in oral carcinogenesis with particular reference to alcohol containing mouthwashes. *Aust dent J* 2008, 53, 302-5

⁶⁷ La Vecchia C. Mouthwashes and oral cancer risk, an update. *Oral Oncol* 2009, 45, 198-200

⁶⁸ Werner C, Seymour RA

⁶⁹ Heier, E.E., De Smit, AA, Wijgaerts I A., and Adriaens P A. Periodontal implications of bonded versus removable retainers. *Am J Orthod Dentofacial Orthop*, 1997, 112, pp 607 – 616

Module 6

Women's oral health issues

Professor R.A.Seymour

Abstract: It is now widely recognised that patients who smoke are at a greater risk of developing periodontal disease when compared to non smokers. While smoking is not exclusively the domain of women, the subject is considered relevant in light of the prevalence data showing that women are more likely to smoke than men. This difference is most marked among teenagers and young adults. Girls are more likely to be regular smokers than boys and the incidence increases with age⁷⁰. Cigarette smoking is second only to bacterial plaque as a risk factor for periodontal disease. Patients who smoke have a 2-8 fold increased risk of developing periodontal disease⁷¹. The rate and extent of periodontal destruction does appear to be related to a patients smoking history. The latter is represented in terms of smoking duration and number of cigarettes consumed per day.

Smoking is also associated with significant periodontal problems in those who are usually considered at a lower risk because of their young age. Young adults (under 25 years) who smoke are three times more likely to have periodontal problems when compared to non smokers⁷². Smoking can affect a range of processes that are involved

in the pathogenesis of periodontal disease, micro flora, host responses and the local effects of nicotine. The main impact of smoking on the periodontium is the poor response the tissues show to treatments. This also includes surgical management. For scaling and root surface instrumentation, the response in smokers is 50-75% less than can be achieved in non-smokers. If patients continue to smoke after treatment they are twice as likely to lose their teeth when compared to non-smokers⁷³. Mucogingival and regenerative procedures are more likely to fail in a smoker when compared to a non-smoker. Similarly, dental implants are twice as likely to fail in patients who smoke⁷⁴. These issues do raise significant problems in the management of periodontal disease in patients who smoke and continue to smoke after treatment.

The recognition that smoking is a significant risk factor for the development and the progression of periodontal disease has raised important issues on the role and place of smoking cessation advice in the dental setting. There is now overwhelming evidence that quitting smoking is beneficial to patients following periodontal treatment. All members of the dental team should be aware of the adverse effects of smoking on the periodontal tissues and the role they can play in smoking cessation.

Osteoporosis and oral health

Professor R.A.Seymour

Abstract: Osteoporosis is a risk factor for increased incidence of tooth loss. It has been reported that patients suffering from osteoporosis have fewer teeth than otherwise healthy control subjects⁷⁵. A recent study involving 650 women diagnosed with osteoporosis showed them to have on average three fewer teeth than otherwise healthy controls. Both smoking history and age were taken into account when determining this number⁷⁶.

There are several strategies available for the management of osteoporosis, and these include calcium and vitamin D supplements, bisphosphonates, hormone replacement therapy, and calcitonin for those at high risk for this condition. In addition, there is a sufficient indication to advise this group of patients that they may be at a greater risk of tooth loss, and perhaps an exacerbation of any underlying periodontal disease. Patients who suffer from osteoporosis should undergo regular 6-monthly dental inspections, and in particular have a thorough inspection of their periodontal tissues.

⁷⁰ Smoking, Drinking and Drug use Among Young People in England in 2004. National Centre for Social Research/National Foundation Educational Research, 2005

⁷¹ Bergstrom J. Cigarette smoking as a risk factor in chronic periodontal disease. *Community dent Oral Epidemiol*, 1989, 17, pp 245-7

⁷² Hashim R, Thomson WM, Pack AR. Smoking in adolescents as a predictor of early loss of periodontal attachment. *Community dent Oral Epidemiol*, 2001, 29, pp 130-5

⁷³ Heasman L, et al. The effect of smoking on periodontal treatment response: a review of clinical evidence. *J Clin Periodontol*. 2006, 33, pp 241-53

⁷⁴ Lambert PM, Morris HF, Ochi S. The influence of smoking on 3-year clinical success of osseointegrated dental implants. *Ann Periodontol*. 2000, 5, pp 79-89

⁷⁵ Bordic F, et al. Bone loss and teeth. *Joint Bone Spine*, 2005, 72, pp 215-21; Yoshihara A, et al. The relationship between bone mineral density and the number of remaining teeth in community dwelling older adults. *J Oral Rehabilitation*, 2005, 32, pp 735-40

⁷⁶ Nicopolou-Karayianni K, et al. Tooth loss and osteoporosis: the osteodent study. *J Clin Periodontol*, 2009, 36, pp 190-7

Effects of sex hormones on the periodontal tissues

Professor R.A.Seymour

Abstract: The female sex hormones have a significant effect on the periodontal tissues, especially the gingival and their responses to bacterial plaque. This effect is most pronounced during pregnancy, but may also be a cause for concern during puberty. Respective patients should be advised of these changes and how they can be managed. The emphasis must be on good plaque control during these times to prevent or reduce plaque-induced gingival inflammation. For the most part, this can be achieved by regular mechanical plaque removal. The emphasis must be

placed on thorough tooth brushing techniques and these have to be carried out twice a day. Also there is a need to remove plaque from the interproximal areas and floss either with flossing tape or specially designed interproximal brushes. An alcohol free antiseptic mouthwash is also a must as it will help clear any remaining plaque left behind from brushing. As a result, it is of great value in these patients, especially if their gingival tissues are inflamed. In addition, any soreness or bleeding from the gingival may deter the patient from completing good mechanical plaque removal and the alcohol free antiseptic mouthwash would prevent plaque accumulation⁷⁷.

Alcohol content of mouthwashes – what are the risks?

Professor R.A.Seymour

Abstract: Alcohol (ethanol) has been extensively used as a constituent of many proprietary mouthwashes, with concentrations ranging from 6-27%. It is a preservative, relatively cheap and is a universal solvent. Alcohol consumption has been long recognised as one of the important risk factors for the development of oral cancer. It is therefore not surprising that concerns have been expressed whether regular use of an alcohol containing mouthwash increases the risk of the development of oral cancer. Mouthwashes are kept in the mouth longer and there is thus more contact with the oral mucosa than alcohol containing beverages. This topic has been the subject of two recent meta-analyses⁷⁸ which came to opposite conclusions. One analysis⁷⁹ suggested that such mouthwashes were perfectly safe, whilst the other⁸⁰ concluded that these mouthwashes pose a significant risk for oral cancer and should be removed from all retail outlets. What is surprising from these two conflicting outcomes is that both analyses used the same data sources.

A more recent review⁸¹, likewise using the same data came to the following conclusions: the alcohol component of mouthwashes does present a risk for the development of oral cancer, but the magnitude of the risk is difficult to quantify. However comparative studies have shown that alcohol affords the mouthwash no benefit in terms of efficacy. Therefore why expose patients to the risk of a significant condition if there are no therapeutic advantages from using an alcohol based product over an alcohol free alternative? As a result, the authors of this latest review called for dentists and other members of the oral healthcare team to recommend an alcohol free mouthwash.

In addition to the risk of oral cancer, the alcohol constituent of mouthwashes also causes a burning sensation on contact with the oral mucosa, dries the mucosa and can have a softening effect on composite filling materials. Alcohol free mouthwashes do not have these adverse effects which is a further consideration for their usage.

⁷⁷ References on file

⁷⁸ La Vecchia C. Mouthwashes and oral cancer risk: an update. *Oral Oncol* 2009, 45, 198 -200; McCullough MJ, Farah CS. The role of alcohol in oral carcinogenesis with particular reference to alcohol containing mouthwashes. *Aust Dent J* 2008, 53, 302-5

⁷⁹ La Vecchia C. Mouthwashes and oral cancer risk: an update. *Oral Oncol* 2009, 45, 198 -200

⁸⁰ McCullough MJ, Farah CS. The role of alcohol in oral carcinogenesis with particular reference to alcohol containing mouthwashes. *Aust Dent J* 2008, 53, 302-5

⁸¹ Werner C, Seymour RA. *British Dental Journal*, December 2010

Module 7

Keeping those pearly whites healthy the Dentyl Active® way

So many people lack good twice daily oral care regimes, with many, at most, giving their mouths just a quick 30 second 'brush dash' morning and night. To help dental practitioners in their quest to educate consumers on the need to embrace a thorough oral care regime, world

renowned periodontologist and oral health specialist, Professor Robin Seymour shares his twice daily dental care regime, which he says is just plain common sense and is vital to his whole health and wellbeing needs.

The Dentyl Active oral care plan with Professor Robin Seymour

- **2 minutes and 30 seconds, 'bristle workout':** Using a small headed toothbrush I squeeze fluoride toothpaste along the top of the bristles. For people with gum recession, a toothpaste for sensitive teeth is vital. I start my brushing regime at the back of the mouth and I work across each tooth with a small, circular, brush action, making sure I get under the gum lines. I finish off 'by brushing my tongue' in the same manner. If you have problems reaching inaccessible parts of a tooth surface use a powered (electric) toothbrush.
- **Getting in-between tight spots:** I use an interdental brush to get to those very hard-to-reach areas in my mouth, ensuring I am clearing as much plaque off as possible, lurking in those really tight mouth and tooth spots. It's not as hard to do as you think.
- After brushing interdentally, I then turn to floss which I use once a day. The correct use of dental floss is to remove bacterial plaque from in between the teeth and just below the gum line. It is difficult to floss effectively and compliance with this method of plaque removal is often poor. Flossing should be completed once a day and if time allows this should be done last thing at night.

Tip: Interproximal cleaning devices are often easier to use than floss. There is also evidence that regular use of an antiseptic alcohol free mouthwash like the Dentyl Active range can be as effective as floss in removing interproximal plaque.

- **Wash away remaining plaque:** Switching over from brushing, I finish my twice daily oral care regime using alcohol free Dentyl Active Complete Care mouthwash. It is vital you shake this mouthwash vigorously so that the two coloured phases in Dentyl Active mix together. Using a capful of rinse, I work the mouthwash around my mouth for at least 30 seconds, and finish with a gargle. I actually use the Dentyl Active Complete Care mouthwash like a flossing tool, driving the mouthwash between various dental gaps and around my gum line. My mouth, teeth, gums and tongue are always left with a deep, clean feel.
- **Oral care musts:** Always change a toothbrush every four to six weeks. There's no point in brushing your teeth with bristles which are flat and worn and providing no working action as a result.

The Dentyl Active oral care plan with Professor Robin Seymour

- **Fit from the inside out:** A healthy diet is vital for good oral health, especially a diet rich in calcium during the years of tooth development. There is also increasing evidence that diets rich in antioxidants may help to ameliorate the plaque induced inflammatory changes in the periodontal tissues. The major risk for tooth decay is a diet rich in refined carbohydrates so avoid snacking on refined carbohydrates and reduce your intake of fizzy drinks, especially between meals.
- **The 6-month check up:** Every 6 months always take a trip to your dentist and hygienist to make sure you have no oral problems lurking. I do and it is a must for everyone, even if you think your oral care regime is perfect!
- **And for youngsters...** Start brushing babies' teeth as soon as they erupt into the mouth. This usually occurs from the age of 6 months, but can vary.
- Brushing should be twice daily, after breakfast and before going to bed. It is important to get children to take care of their teeth as this will hopefully set a pattern into adult life.
- The deciduous teeth start to appear at 6 months, and will be lost over time when the permanent teeth start to erupt (from about 6 years onwards).
- Children should visit their dentist as early as possible so to familiarise them with the dental environment.
- Fluoride is very important in reducing the risk of dental caries. This is most frequently applied in the form of toothpaste. When the permanent molars erupt, it may be worthwhile applying a fissure sealant to the occlusal tooth surfaces. This will protect the tooth further against decay.
- It is sometimes very difficult to exclude sweets and other forms of confectionary from children. Sweets if given should ideally be offered at the end of a meal and not between meals. Restrictions should also be placed on fizzy drinks which can contain a high concentration of sugar.



**Dentyl
Active**

Visit www.dentylactive.com for more information on our alcohol free mouthwash range

facebook

Find us on Facebook by searching 'Dentyl'

Want to order Dentyl Active mouthwash for your Practice?
It is quick and easy, simply call **01923 205704** for further information.

Distributed by Dendron Ltd, WD18 7JJ, UK on behalf of Fresh Breath Ltd, UK.