RELIEVES SENSITIVITY IN JUST
30 SECONDS
Clinically proven in 4 studies

APPROACHES TO DIAGNOSING AND MANAGING SENSITIVITY IN THE CLINIC

#DefeatSensitivity

THE ROOT CAUSES OF SENSITIVITY

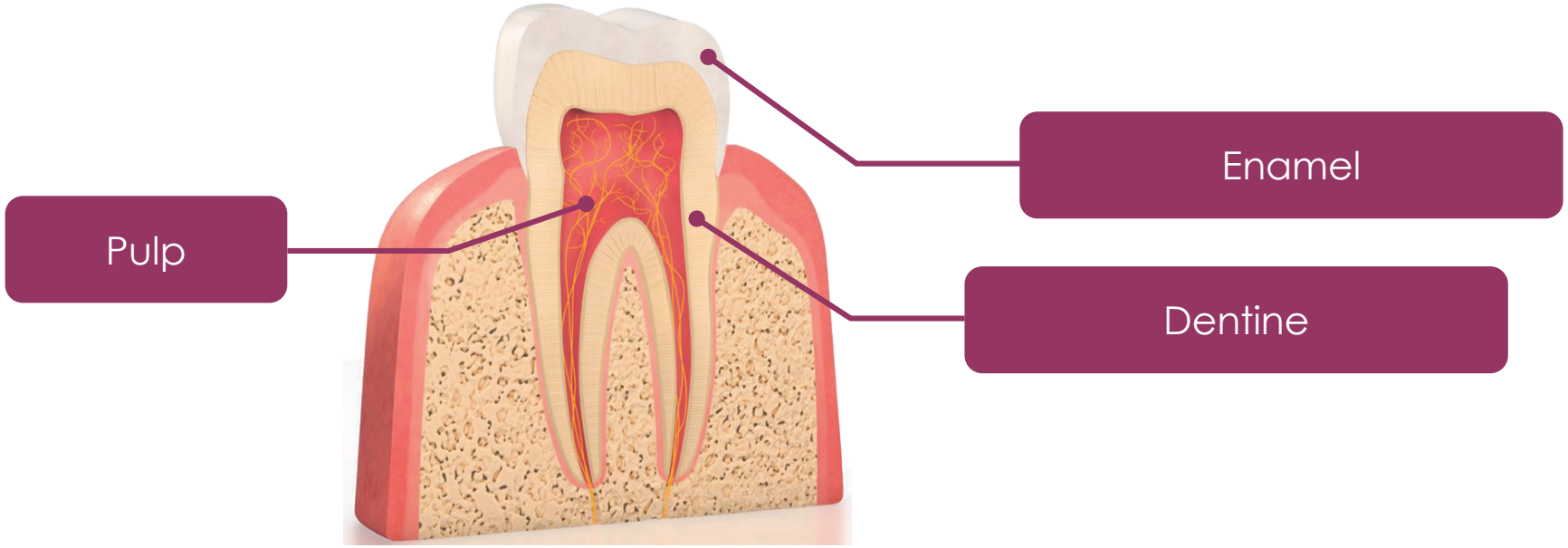
Dentine contains microscopic, fluid-filled tubules that transmit pain signals to the nerves in the pulp.

Normally, dentine is protected by enamel and gums

Dentine can be exposed by enamel wear from acid attacks, or by gingival recession from overbrushing or gingivitis

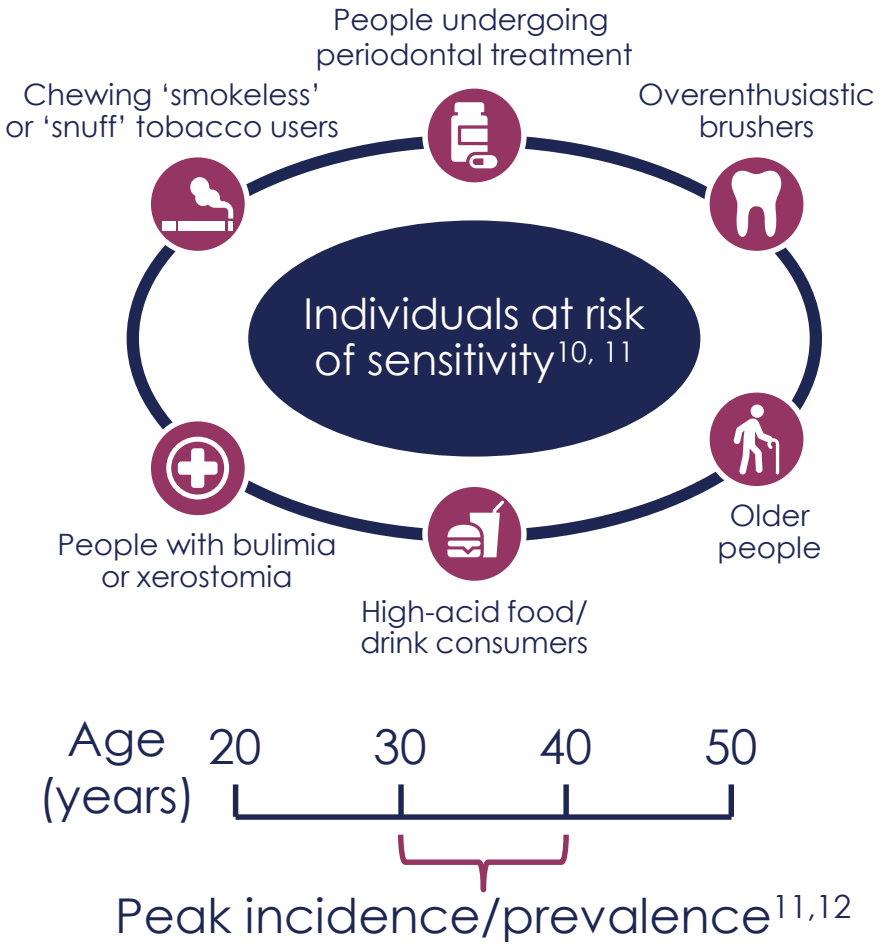
Once dentinal tubules are exposed, external stimuli can activate the pulpal nerves, causing pain

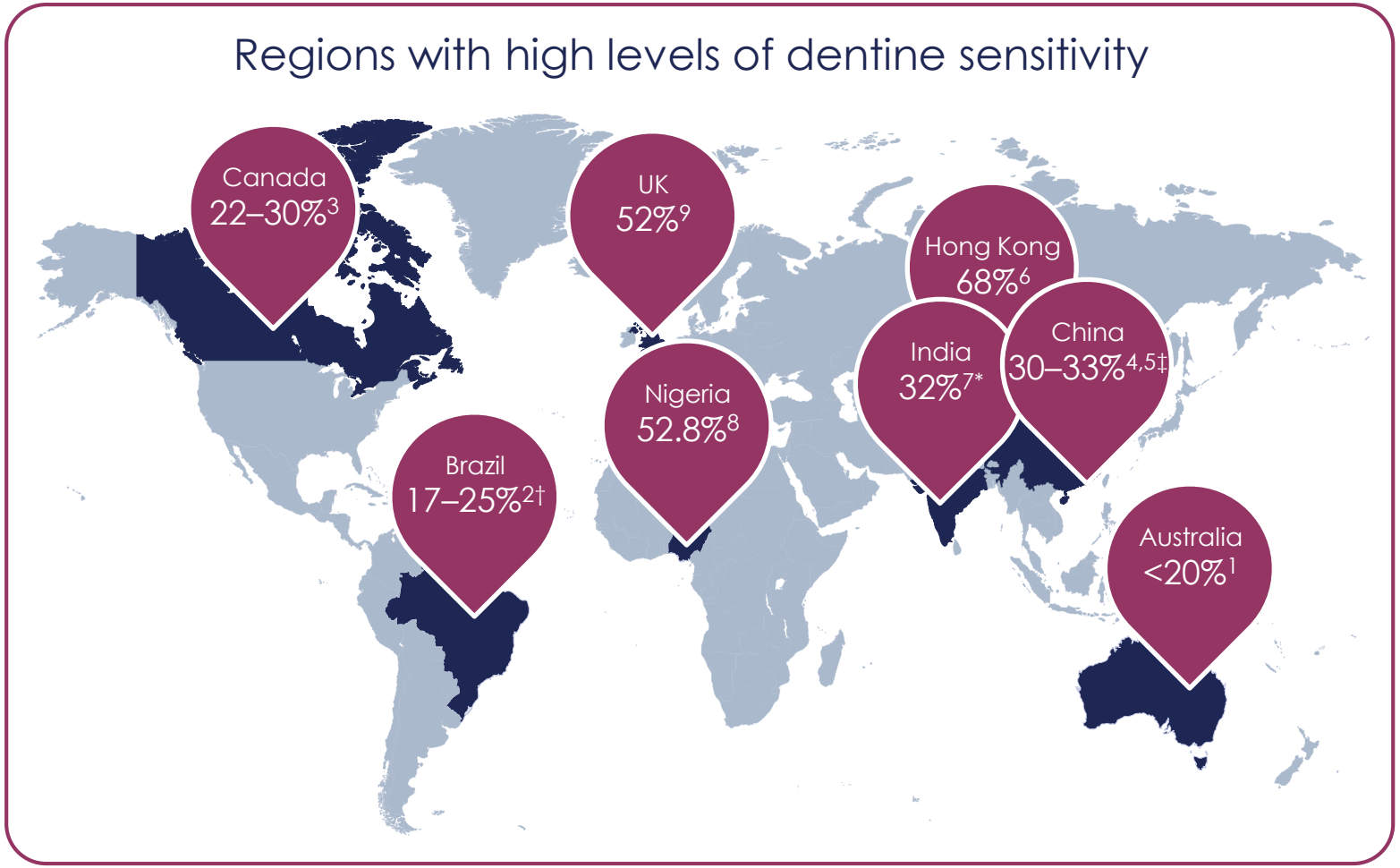
Sensitivity



Davari AR, et al. *J Dent Shiraz Univ Med Sci* 2013;14(3):136–145.

SENSITIVITY: AETIOLOGY, RISK FACTORS AND PREVALENCE





* Andhra Pradesh.
† Rio de Janeiro
‡ Shanghai

1.Amarasena N, *et al. Aust Dent J* 2010;55(2):181–187; 2. Fischer C, *et al. J Dent* 1992;20(5):272–276; 3. Splieth CH, *et al. Clin Oral Invest* 2013;17(Suppl 1):S3–S8; 4. Rong WS, *et al. Zhonghua Kou Qiang Yi Xue Za Zhi* 2010;45(3):141–145; 5. Ye W, *et al. Shanghai Kou Qiang Yi Xue* 2009;v18(3):247–250; 6. Rees JS, *et al. J Dent* 2003;3(17):453–461; 7. Naidu GM, *et al. J Clin Diagn Res* 2014;8(9):ZC48–ZC51; 8. Azodo CC, *et al. Niger Med J* 2011;52(3):189–192; 9. Gillam DG. *J Oral Rehabil* 1999;26(9):710–714; 10. Gillam DG. *Clin Oral Invest* 2013;17(Suppl 1):S21–S29; 11. Davari AR, *et al J Dent Shiraz Univ Med Sci* 2013;14(3):136–145; 12. Bubteina & Garoushi. *Dentistry* 2015; 5:9.

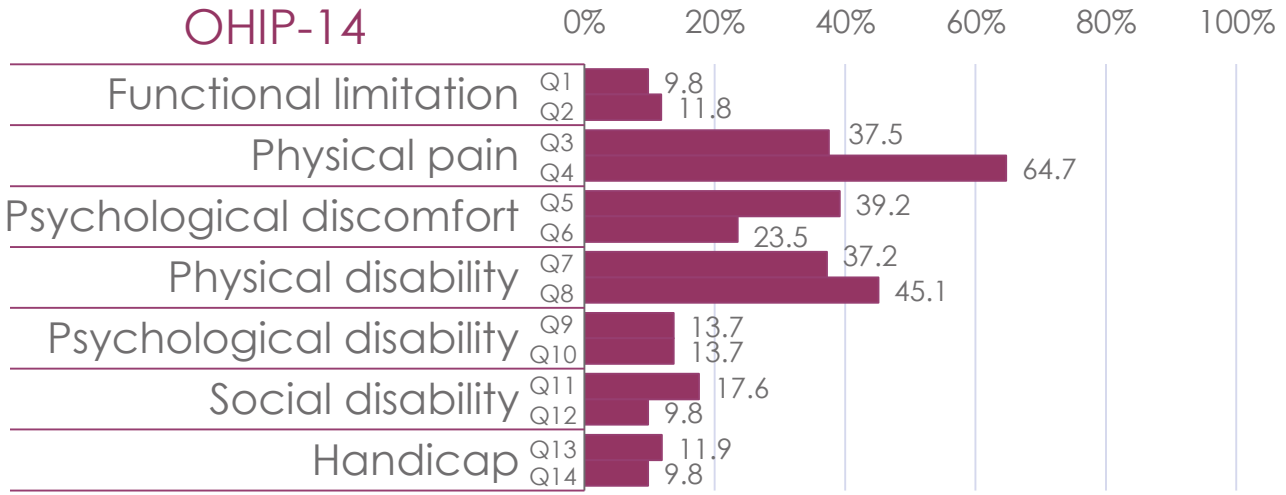
SENSITIVITY INFLUENCES QUALITY OF LIFE

> "You never forget that you have it because the decisions you make and the way you do things is affected by it[1]"

- Key impacts of hypersensitivity on everyday life:[1]
  - Pain
  - Functional status and everyday activities (e.g. eating, drinking, talking)
- Patients with hypersensitivity report substantial OHRQoL impairment[2]
- Around 50% of patients do not receive any treatment for their discomfort[3]

Impact of sensitivity on OHRQoL[4*]

Percentage of patients stating that they are affected "very often" or "fairly often" in response to the 14 questions in the OHIP-14 questionnaire



OHIP = oral health impact profile; OHRQoL = oral health-related quality of life; Q = question.
* The OHIP-14 items has been used to assess the OHRQoL of patients suffering from sensitivity.
The OHIP consists of 14 questions (Q1–Q14) divided in to 7 domains: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap. In the graph, each bar represents one question.

1. Gibson B, *et al. Soc Sci Dent* 2010;1(1):11–20;
2. Bekes K, *et al. J Oral Rehabil* 2009;36(1):45–51;
3. Gillam DG. *J Oral Rehabil* 1999;26(9):710–714;
4. Idon P, *et al. Eur J Gen Dent* 2017;6:99–105.

DIAGNOSING SENSITIVITY IN THE CLINIC

- Discuss a patient's history of sensitivity
- Exclude other dental defects that share the same type of pain caused by sensitivity
- Use one of the following tests and assess response according to a pain scale

Tests used in the clinic to diagnose sensitivity

Stimuli	Tools, e.g.
Mechanical (tactile)	Explorer probe, constant pressure probe (Yeaple)
Chemical (osmotic)	Hypertonic solutions
Electrical	Electrical pulp testers and dental pulp stethoscope
Evaporative	Cold air blast, Yeh air thermal system
Thermal	Electronic threshold measurement device, cold water testing heat thermo-electric devices (e.g. Biomat Thermal Probe)

Clinical conditions affecting an accurate diagnosis of sensitivity:

- Cracked tooth syndrome
- Fractured restorations or teeth
- Dental caries
- Post-operative sensitivity
- Acute hyperfunction of teeth
- Atypical facial odontalgia
- Palatal-gingival groove
- Hypoplastic enamel
- Congenitally open cementum–enamel junction
- Improperly insulated metallic restorations

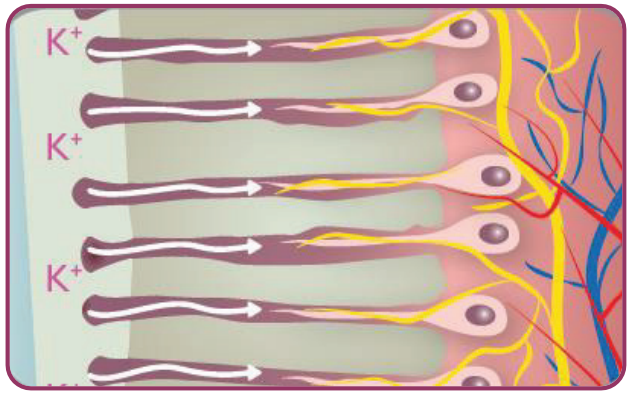
Gillam DG. *Clin Oral Invest* 2013;17(Suppl 1):S21–S29.

MANAGEMENT OF SENSITIVITY WITH ORAL CARE PRODUCTS

+ There are two principal approaches to relieving sensitivity:

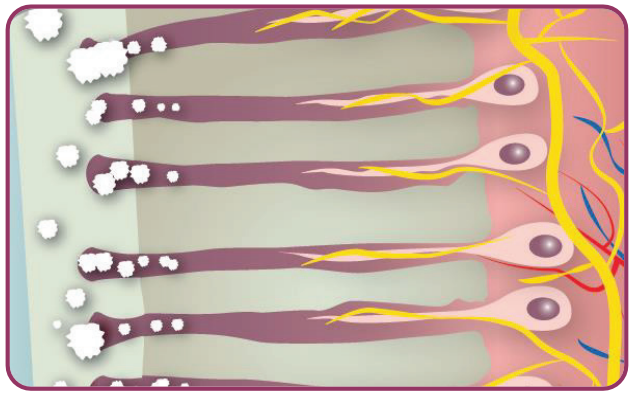
Desensitising nerves

- Potassium nitrate[1]
- Potassium citrate[2]



Occluding tubules

- Strontium acetate[3]
- Stannous fluoride[4]
- Bioglass[5]



1. Davari AR, *et al. J Dent Shiraz Univ Med Sci* 2013;14(3):136–145; 2. Peacock JM & Orchardson R. *J Clin Periodontol* 1999;26(1):33–37; 3. Arnold W, *et al. J Dent* 2015;43(4):440–449; 4. Petersson L. *Clin Oral Investig* 2013;17(Suppl 1):63–71; 5. Earl J, *et al. J Clin Dent* 2011;22(3):62–67.

MANAGEMENT OF SENSITIVITY IN THE CLINIC AND AT HOME

- In-clinic approaches to manage sensitivity include the application of agents to occlude dentinal tubules[1]
- In-clinic management must be supported with advice to patients on managing sensitivity at home, including the use of desensitising agents such as toothpaste, tooth powders and mouth washes[1]

Anti-sensitivity active ingredients in toothpastes:

Potassium salts	Desensitise nerves[2]
Strontium acetate	Occludes dentinal tubules by forming small crystalline deposits on dentine surface[3]
Stannous fluoride (SnF_2)	Reduces dentine sensitivity by occluding dentinal tubules[3,4]
Bioglass	Calcium sodium phosphosilicate is converted to a HAP-like substance. Occludes dentinal tubules[5]

HAP = Hydroxyapatite

1. Davari AR, *et al. J Dent Shiraz Univ Med Sci* 2013;14(3):136–145; 2. Peacock JM & Orchardson R. *J Clin Periodontol* 1999;26(1):33–37; 3. Arnold W, *et al. J Dent* 2015;43(4):440–449; 4. Petersson L. *Clin Oral Investig* 2013;17(Suppl 1):63–71; 5. Earl J, *et al. J Clin Dent* 2011;22(3):62–67.

MANAGEMENT OF SENSITIVITY IN THE CLINIC AND AT HOME

Sensitive Expert by Pepsodent
contains a blend of three carefully chosen ingredients:

- **Potassium citrate** desensitises the nerves for instant relief. Dabbing the toothpaste onto sensitive areas is clinically proven in 4 studies to relieve the pain of sensitivity within **30 seconds**.[1–4]
- **Hydroxyapatite (HAP)** is the natural mineral of enamel, remineralising and protecting from demineralisation.[5,6]
- **Zinc citrate**, with its proven antibacterial effects, helps to prevent further gingival recession by strengthening the gums.[7]

1. Schäfer F, *et al. J Dent Res* 2012;91(C):84; 2. Unilever data on file; 3. Unilever data on file; 4. Unilever data on file; 5. Hornby K. Caries Research 2010; 44:182; 6. Hornby K, et al. Int Den J 2009; 59:325–331; 7. Brading MG, et al. Int Den J 2009; 59:332–337.

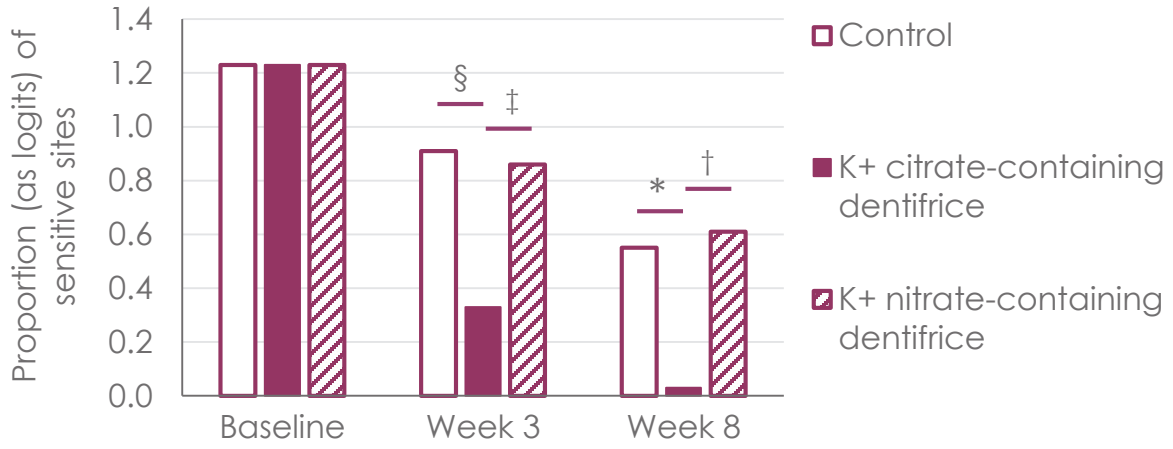
POTASSIUM SALTS ACT AS DESENSITISING AGENTS *IN VIVO*

Study design

- A clinical trial comparing toothpastes containing potassium ions (K^+) citrate and K^+ nitrate with a control toothpaste for their ability to reduce dentine hypersensitivity[1]

Results

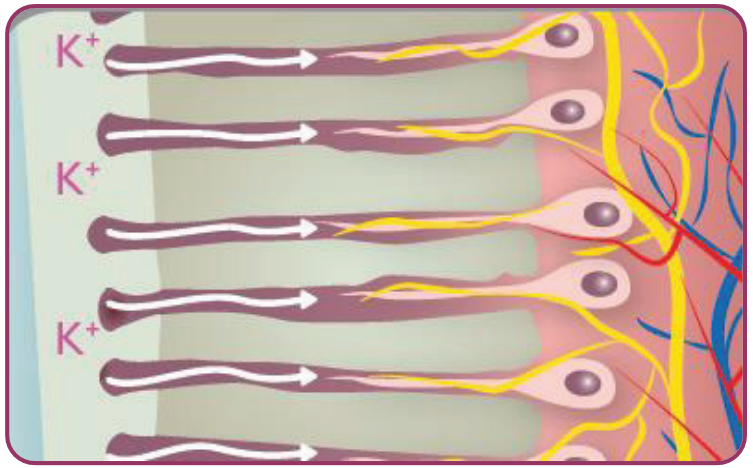
Improvement in sensitivity using K^+-containing dentifrices**[1]



*p < 0.07; †p < 0.03; ‡p < 0.02; §p < 0.01.
SEM = standard error of the mean.
**after baseline adjustment. Data are mean ± SEM.

Summary

- The K^+ citrate-containing toothpaste was more effective at reducing hypersensitivity than the control or K^+ nitrate-containing toothpaste[1]
- K^+ diffuses along dentinal tubules to the pulpal nerves, where they decrease nerve excitation[2,3]



1. Chesters R, *et al. J Clin Periodontol* 1992;19(4):256–261;
2. Peacock JM & Orchardson R. *J Clin Periodontol* 1999;26(1):33–37;
3. Kim S. *J Endod* 1986;12(10):482–485.

EFFECT OF SENSITIVE EXPERT BY PEPSODENT ON SENSITIVITY IN 4 CLINICAL STUDIES

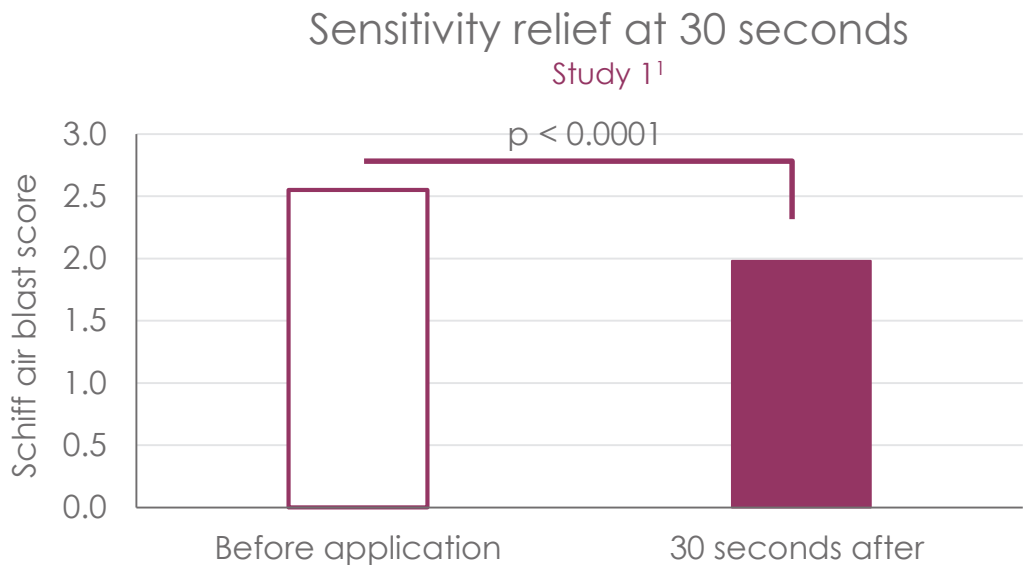
Studies design

Patients with sensitive teeth based on a Yeaple score < 30 and a Schiff score ≥ 2 on exposed roots of two teeth (n = 102) were enrolled

Test toothpaste contained HAP (2%), potassium citrate, zinc citrate*

Primary outcome measure
- Change in sensitivity†

Results of study 1



Studies 2–4

Study	Schiff air blast score		
	Before application	30 seconds after	P value
Study 2 (n = 103)	2.39	1.92	p < 0.001
Study 3 (n = 100)	2.36	1.89	p < 0.0001
Study 4 (n = 134)	2.28	2.07	p < 0.0001

Summary

+ Sensitive Expert by Pepsodent provided significantly greater relief from sensitivity at 30 seconds in 4 clinical studies

HAP = Hydroxyapatite; R = randomisation.
*Toothpastes were applied directly on the exposed dentine and the area massaged for 30 seconds.
†Sensitivity was assessed before and after toothpaste application using the Yeaple tactile and Schiff air-blast methods.

1. Schäfer F, *et al. J Dent Res* 2012;91(C):84; 2. Unilever data on file; 3. Unilever data on file; 4. Unilever data on file.

IN VITRO STUDY TO EVALUATE THE EFFECT OF HAP-CONTAINING TOOTHPASTE ON ENAMEL PROTECTION

Study design

Bovine enamel samples

R

- Control toothpaste (no fluoride or HAP)
- Fluoride Toothpaste (without HAP)
- Sensitive Expert by Pepsodent (fluoride + HAP)

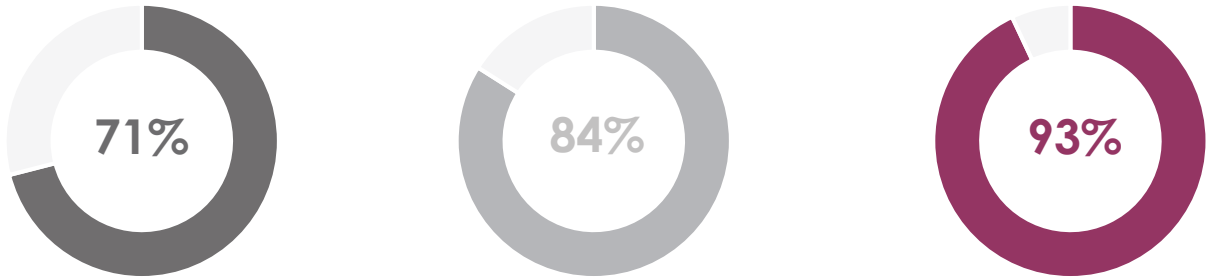
Outcome measures

- Mean percentage in surface microhardness maintained from baseline under pH cycling challenges

Results

Mean percentage in surface microhardness maintained from baseline

$p < 0.05$*



Control toothpaste (no fluoride or HAP)

Fluoride Toothpaste (without HAP)

Sensitive Expert by Pepsodent (fluoride + HAP)

Summary

+ Treatment of bovine enamel samples with Sensitive Expert by Pepsodent resulted in a significant protection of enamel microhardness under acid challenges

HAP = Hydroxyapatite; R = randomisation.
*Difference between all toothpastes.

Hornby K. Caries Research 2010; 44:182.

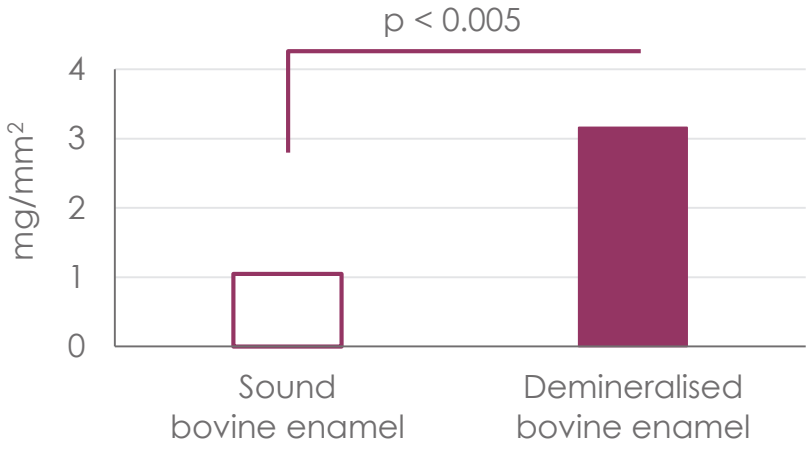
IN VITRO STUDY TO EVALUATE THE ENAMEL BENEFITS OF A HAP-CONTAINING TOOTHPASTE

Study design

- This study evaluated the ability of a HAP-containing toothpaste (Sensitive Expert by Pepsodent) to remineralise enamel following acid-challenge *in vitro*

Results

Calcium (^{45}Ca) uptake into bovine enamel[1]



Summary

- Sensitive Expert by Pepsodent targets the remineralisation of damaged enamel[1]

HAP = Hydroxyapatite.

Hornby K, *et al. Int Dent J* 2009;59:325–331.

EFFECT OF SENSITIVE EXPERT BY PEPSODENT ON GINGIVAL CONDITION AFTER 3 MONTHS' USE

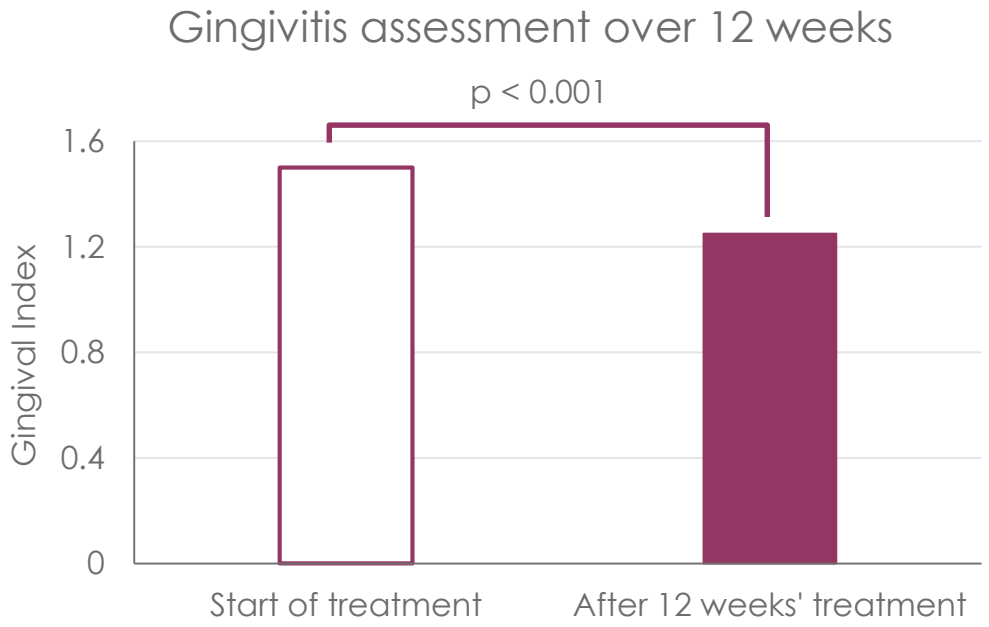
Study design

Male and female adult volunteers aged 18–60 years old

→ 12 weeks' use of test toothpaste containing 2% zinc citrate and 2% HAP*

→ **Primary outcome measure**
- Gingival inflammation level†

Results



Summary

- Zinc citrate has an antibacterial and antiplaque effect that can prevent gingivitis and associated gum recession
- Sensitive Expert by Pepsodent significantly reduced gingivitis after 12 weeks' use

HAP = Hydroxyapatite.
*Patients were instructed to use the control or test toothpaste twice daily for 3 months.
†The assessments were made using the gingivitis index of Löe.

Brading MG, *et al. Int Dent J* 2009;59:332–337.

SUMMARY

Sensitive Expert by Pepsodent:

The first choice for instant relief from sensitivity[1]

Clinically proven relief from sensitivity
in 30 seconds[1–4]

Remineralises and helps protect
from enamel demineralisation[5,6]

Strengthens gums and helps prevent
further gingival recession[7]

1. Schäfer F, et al. J Dent Res 2012;91(C):84; 2. Unilever data on file; 3. Unilever data on file; 4. Unilever data on file; 5. Hornby K. Caries Research 2010; 44:182; 6. Hornby K, et al. Int Den J 2009; 59:325–331; 7. Brading MG, et al. Int Den J 2009; 59:332–337.