Análise da descoloração dentária induzida por dois cimentos à base de Silicato de Cálcio: estudo *in vitro*

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Introdução

A estética dentária é um objetivo e uma preocupação primordial, tanto para pacientes como para profissionais. Os tratamentos pulpares conservadores, apesar da grande probabilidade de resultarem em sucesso biológico quando devidamente executados, podem levar ao aparecimento de descolorações dentárias, que frequentemente prejudicam a estética. Na prática clínica, os tratamentos pulpares conservadores, aplicados desde as simples protecções pulpares conservadoras, até às pulpotomias clássicas ou parciais, podem ser aplicados com diversos materiais, de onde se destacam os cimentos inorgânicos à base de silicato de cálcio pelos excelentes resultados biológicos usualmente obtidos. Todavia, em determinadas condições, ainda não perfeitamente esclarecidas, podem estar associados a alterações da cor dos dentes significativas, nomeadamente os cimentos à base de agregado trióxido de minerais (MTA).

Cimentos à base de Silicato de Cálcio

- Boa biocompatibilidade
- Propriedades antibaterianas
- Boas propriedades mecânicas
- Bom selamento marginal
- Propriedades ergonómicas!
- Pouco sensíveis à humidade

Objetivo

Avaliar as alterações cromáticas a nível dentário, induzidas por dois cimentos à base de Silicato de Cálcio. A hipótese nula consistiu em considerar que não existem diferenças entre as alterações cromáticas induzidas pelos materais.

Materiais e métodos

1. Preparação das amostras

- Selecionaram-se 28 pré-molares humanos
- Cortaram-se as raízes 2mm abaixo da JAC
- Removeram-se cálculos e manchas extrínsecas
- Fez-se a extirpação pulpar via corte cervical
- Selamento cervical com adesivo e resina composta
- Inseriram-se as coroas em bases de resina composta
- Cavidades oclusais padronizadas (até à base camara pulpar)

Fig. 1 – Ilustração de uma amostra.

2. Randomização estratificada por valor

Dividiram-se as amostras em 4 grupos:

Grupos	Material	Fabricante
1 n=4 (Controlo -)	**Algodão seco**	---
2 n=4 (Controlo +)	**Algodão + sangue fresco**	---
3 n=10	**ProRoot® MTA**	Dentsply Tulsa Dental, Johnson City, TN
4 n=10	**Biodentine™**	Steptodonto, Saint Maur dés Fosses, France

3. Tempos de medição da cor

T0 Após a preparação da cavidades de acesso oclusal

A - Colocação dos diferentes materiais nas cavidades dentárias

B – Restauração com CIV cor A1 (Ketac™ Fil Plus Aplicap™ - 3M Espe)

T1 Imediatamente após A + B

C - Amostras colocadas no escuro: estufa, 100% humidade, 37°C

T2 6 semanas após T0

4. Medição da cor

4.1. Foi criada uma "estação de medição", com standardização da direção e distância, composta por:

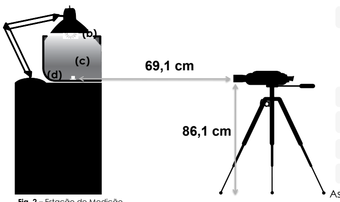


Fig. 2 – Estação de Medição.

(a) Colorímetro PR®- 650 SpectraScan®

Fig. 3

(b) Candeeiro

(c) Luz LED 5500K 6W

(d) Cartolina branca à volta da zona de luz

(e) Amostra

As medições foram realizadas sem qualquer outra luz ambiente

4.2. O Colorímetro apresenta um esfera preta que corresponde à área de medição da cor que foi standardizada em todos os dentes:

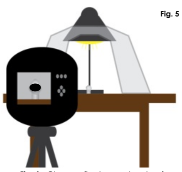
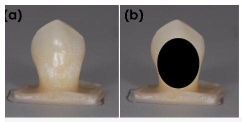


Fig. 4 – Observação da amostra através do colorímetro.

Fig. 5



(a) Amostra visualizada a "olho nú"

(b) Amostra visualizada através do colorímetro

5. Avaliação da cor

Comission International de l'Eclairage's - CIE

Espaço de cor: coordenadas **L***, **a*** e **b***

L* = **Luminância**; 0 (preto) a 100 (branco)

a* = Vermelho (+) a Verde (-)

b* = Amarelo (+) a Azul (-)

Diferença de cor = ΔE

$\Delta E = [(L^*_1 - L^*_2)^2 + (a^*_1 - a^*_2)^2 + (b^*_1 - b^*_2)^2]^{1/2}$

$\Delta E = \Delta E = [(\Delta L^*)^2 + (\Delta a^*)^2 + (\Delta b^*)^2]^{1/2}$

$\Delta E \geq 2{,}3$: Alterações cromáticas perceptíveis ao olho humano

A análise estatística foi efectuada com recurso ao teste ANOVA de medidas repetidas, teste unilateral t-student considerando um ponto de corte de 2.3, ANOVA fatorial, teste de Kruskal-Wallis, teste de Mann-Whitney, e o teste de amostras emparelhadas ANOVA e correspondentes post-hoc de Tukey. O nível de significância considerado foi $\alpha<0.05$.

Resultados

O grupo 2 (Algodão seco + sangue fresco) teve a maior alteração de cor (ΔE) ao longo do tempo.

Não foram encontradas diferenças estatisticamente significativas na diferença de cor (ΔE) entre o WMTA (grupo 3) e Biodentine™ (grupo 4) em T1 e T2.

Tendo em conta a variação da Luminância (L*), foram determinadas diferenças estatisticamente significativas em T1-T2, entre o WMTA (grupo 3) e Biodentine™ (grupo 4).

A hipótese nula foi rejeitada.

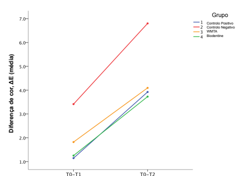


Fig. 6 – Ateração da cor (ΔE), ao longo do tempo.

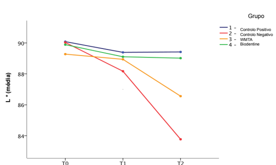


Fig. 7 – Evolução da Luminância (L*), ao longo do tempo.

Conclusão

No que diz respeito à variação global da cor (AE), não existem diferenças significativas entre os dois cimentos à base de silicato de cálcio a curto prazo. No entanto, em relação ao parâmetro L* (luminância/valor), foi possível observar uma variação do L * maior para o WMTA, no sentido de uma maior descoloração dentária provocada por este material em termos de valor.

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