

Componentes abrasivos numa amostra de dentífricos: estudo piloto

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Objetivos

A utilização de dentífricos fluoretados constitui, reconhecidamente, a medida mais eficaz na prevenção da cárie dentária, estando a sua utilização massiva na base do controlo da doença. A fórmula dos dentífricos está em constante otimização de propriedades e efeitos terapêuticos; a incorporação de agentes abrasivos constitui disso exemplo, embora se lhes atribua potenciais efeitos nefastos, quer sobre a superfície dentária, quer sobre diferentes materiais restauradores. Este trabalho objetivou testar metodologias potencialmente aplicáveis na caracterização e quantificação dos diferentes abrasivos, pretendendo-se adicionalmente identificar qual a informação disponibilizada a este propósito nos rótulos de alguns dos dentífricos comercialmente disponíveis no mercado português.

Métodos

Foi efetuado um levantamento de uma seleção de dentífricos disponíveis no mercado baseada na sua expressão comercial. A informação recolhida resultante da consulta dos rótulos foi organizada e inserida em Microsoft Excel 2014 para posterior análise descritiva. Em paralelo definiu-se uma subamostra de diferentes dentífricos submetida a distintos métodos laboratoriais visando a identificação dos componentes abrasivos por SEM (Hitachi, modelo SU-70), complementada por análise química EDS (Bruker, modelo QUANTAX 400), difração de RX (Difratómetro de RX Rigaku, Geigerflex) e análise do tamanho de partículas (Coulter, LS 230).

Resultados

LEVANTAMENTO COMERCIAL

- 4 superfícies comerciais; 35 dentífricos (9 especificamente comercializados em farmácias/parafarmácias + 24 em super/hipermercados)
- grupo das sílicas hidratadas: abrasivo mais referenciado
- outros frequentemente incluídos na composição: sílica hidratada; carbonato de cálcio; alumina; fosfato dicálcico dihidratado; pirofosfato de cálcio; perlite; bicarbonato de sódio
- conjugação de mais de um tipo no mesmo dentífrico

Tabela I - Tipo e combinação de abrasivos presentes nos dentífricos analisados

Tipo e combinação de abrasivos	n (%)
Bicarbonato de sódio	2 (5,7)
Sílica	2 (5,7)
Sílica hidratada	20 (57,1)
Sílica hidratada e sílica	2 (5,7)
Carbonato de cálcio e bicarbonato de sódio	4 (11,4)
Sílica e bicarbonato de sódio	1 (2,9)
Fosfato dicálcico dihidratado	1 (2,9)
Sílica hidratada e alumina	2 (5,7)
Sem abrasivos	1 (2,9)
Total	35 (100)

Tabela II - Recomendações de uso constantes dos rótulos dos dentífricos analisados

Idade recomendada	n (%)
> 12 anos	6 (17,1)
> 7 anos	6 (17,1)
> 6 anos	11 (31,4)
> 3 anos	1 (2,9)
2 - 6 anos	1 (2,9)
1 - 5 anos	1 (2,9)
Aparecimento do 1º dente - 6 anos	1 (2,9)
Sob controlo farmacêutico	1 (2,9)
Sem informação	7 (22,8)
Total	35 (100)

- informação disponibilizada nos rótulos considerada escassa, particularmente no referente aos valores de pH e RDA/REA (referentes à abrasão da dentina e esmalte)

IDENTIFICAÇÃO E CARATERIZAÇÃO DE COMPONENTES EM DENTÍFRICOS

- n=10, comercialmente disponíveis no mercado português, "júnior"/"adulto"

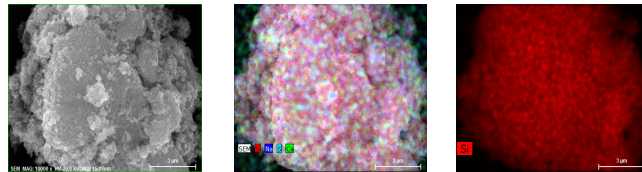
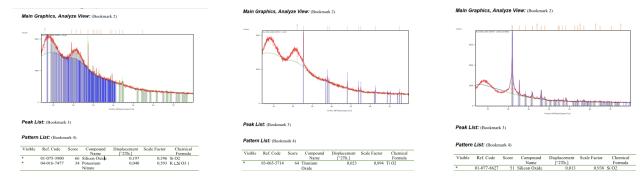
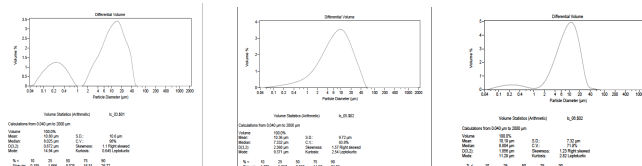


Fig. 1, 2 e 3: Imagens de SEM e EDS* (Intraobrasão por dispêso de energia) de uma das amostras de dentífrico estudadas (disponível no mercado português onde se identificam alguns dos seus componentes químicos, entre os quais a sílica *SEM marca Hitachi, modelo SU-70 e EDS marca Bruker, modelo QUANTAX 400



Figuras 4, 5 e 6: Imagens exemplificativas de difratogramas e respetivas análises (Difratómetro de RX Rigaku, Geigerflex) de componentes de três dos dentífricos integrantes da amostra



Figuras 7, 8 e 9: Imagens exemplificativas de análise espectral (Coulter, LS 230) da distribuição da dimensão das partículas de três dos dentífricos integrantes da amostra

Conclusões

Um dos principais ingredientes funcionais do dentífrico é o componente abrasivo advindo de várias categorias químicas, sendo o grau de abrasividade variável essencialmente com o tamanho, forma e regularidade das partículas. Os efeitos clínicos globais sobre os tecidos dentários e/ou restaurações parecem depender, no entanto, de algumas outras condicionantes individuais, de que são exemplo a força e técnica de escovagem, características salivares, dietéticas e inerentes às propriedades específicas dos materiais restauradores. A abrasividade depende do tipo da partícula, concentração, forma, tamanho, densidade e formação de aglomerados, tornando-se fundamental determinar qual a potencial expressão clínica e eventuais fatores que a modulem concomitantemente. De acordo com a bibliografia consultada é ainda importante ter em atenção a compatibilidade entre o componente abrasivo e o tipo de fluoretos que compõem o dentífrico. Sublinha-se a necessidade de disponibilização no rótulo de informação complementar por parte dos fabricantes relativamente a estes componentes, o que contribuirá para uma melhoria na seleção individualizada do dentífrico. As metodologias selecionadas neste trabalho piloto são promissoras na análise e caracterização dos componentes abrasivos em dentífricos, complementando-se em termos de objetivos de aplicação.

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