Comparison of YOU&YOU Whitening Total Care™ Dentifrice VS research's results of 26 Commercial toothpastes available at the market.

Manufacturer	*Toothpaste - Dentifrice*	*INCIs main*	*Radioactive dentin abrasion, RDA ***	*Pellicle Cleaning Ratio, PCR **	*Cleaning Efficiency Index, CEI ****	*Enamel Polishing Potential, EPP **
RJ1 Sp. z o .o.	***YOU&YOU. Whitening & Total Care ™***	***Kaoline + Perlite + Hydroxyapatite + Tetrasodium Pyrophosphate***	**95**	**145,6**	**2,01**	**87.7**

** The studies have been conducted and reviewed according to the FDA Monograph on Anticaries Drug Products for Over-the-Counter Human Use and the FDA Good Laboratory Practices.*

** Results are proven by Therametric Technologies - a recognized dental research and testing company specializing in the testing of oral healthcare product.*

** Results confirmed by "in vitro" study, and compliance with "FDA -GLP" Good Laboratory Practice Guidelines.*

** Enamel Polishing Potential EPP = SRP Specular Reflectance Percentage, Gloss Percentage .*

***YOU & YOU. Internal RDA (Radioactive dentin abrasion) result performed by research and development in OMYA, Oftringen, Switzerland*

**** Cleaning Efficiency Index CEI = (RDA +PCR - 50)/RDA*

	Manufacturer	*Toothpaste - Dentifrice*	*INCIs main*	*RDA*	*PCR*	*CEI*	*EPP*
		Calcium Pyrophosphate	**Refrence Std**	**100**	**100**	**1,50**	**67**
1	Guaber, UK	BlanX Whitening	Silica + Arctic lichen (Cetraria islandica)	35	25	0,29	38
2	Church & Dwight	A&H Dental Care Adv Cleaning	Sodium bicarbonate	51	33	0,67	55
3	Fresh, Inc	Umbrian Clay	Fuller's earth + Sodium chloride	53	53	1,06	85
4	Johnson & Johnson	Rembrandt Complete	Dicalcium phosphate + *Al hydroxide,* Papain	58	91	1,71	56
5	Robell Research	Super Smile	Dicalcium phosphate + *Ca peroxide*, Na perborate	77	74	1,31	55
6	Colgate-Palmolive	Colgate Cavity Protection	Hydrated silica + Sodium phosphates	70	51	1,01	49
7	Johnson & Johnson	Rembrandt Intense Stain	Hydrated silica + Dicalcium phosphate + Al hydroxide, Papain	83	98	1,58	46
8	Tom's of Maine	Tom's of Maine Natural	Calicum Carbonate + Hydrated silica	86	63	1,15	48
9	Dentisse, Inc	Dentisse Natural Reflection	Refined Kaolin clay + Bentonite clay	88	119	1,78	97
10	Procter & Gamble	Crest Cavity Protection	Hydrated silica + Sodium phosphates	110	66	1,15	65
11	GlaxoSmithKline	Aquafresh Extreme Clean	Hydrated silica + *Iron oxide*	102	100	1,49	55
12	GoSmile, Inc	GoSmile All Whitening	Hydrated silica	117	98	1,41	59
13	Church & Dwight	Mentadert Advanced Whitening	Hydrated silica + Na bicarbonate + H peroxide, phosphoric acid	125	78	1,22	56
14	Colgate-Palmolive	Colgate Simple White	Hydrated silica + Na phosphates, Na-Mg silicate, H peroxide	133	71	1,16	48
15	Jason Natural	Jason's Powersmile	Ca carbonate, Silica + Na bicarbonate	146	79	1,20	58
16	Procter & Gamble	Crest Extra Whitening	Hydrated silica, Na bicarbonate + Tetrasodium pyrophosphate	141	101	1,36	80
17	GlaxoSmithKline	Sensodyne Extra Whitening	Hydrated silica + Sodium phosphates	149	107	1,38	48
18	Procter & Gamble	Crest Pro Health	Hydrated silica + Na hexametaphosphate, Trisodium phosphate	155	116	1,43	55
19	Johnson & Johnson	Rembrandt Plus	Hydrated silica + Urea peroxide, Al hydroxide, Silica, Papain	165	108	1,35	48
20	Colgate-Palmolive	Colgate Total Whitening	Hydrated silica + PVM/MA copolymer	165	98	1,29	49

21	GlaxoSmithKline	Aquafresh White & Shine	Hydrated silica + Disodium Phosphate, Mica	182	123	1,40	67
22	Church & Dwight	Pearl Drops Triple Action Whitening	Na bicarbonate, Hydrated silica + Tetrasodium pyrophosphate	195	109	1,30	50
23	Procter & Gamble	Crest Vivid White	Hydrated silica + Na hexametaphosphate	202	77	1,13	58
24	Colgate-Palmolive	Colgate Luminous	Hydrated silica + Tetrasodium pyrophosphate	256	121	1,28	67
25	Colgate-Palmolive	Ultra Brite Advnced Whitening	Hydrated silica, Alumina + Tetrasodium pyrophosphate	260	138	1,34	80
26	BriteSmile, Inc	Brite Smile	Hydrated silica + Pentasodium triphosphate	269	132	1,30	50

Abrasion, polishing, and stain removal characteristics of various commercial dentifrices in vitro

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Introduction

Historically, the need for abrasive agents in cleaning the teeth has been recognized since ancient times, and various materials (e.g., pumice, bone ash and powdered marble, shells and coral) have been used for the mechanical removal of tooth debris and stains.

1. In modern times, the application of dentifrices with a toothbrush has been the primary method for cleaning the teeth. A key function of dentifrices is to control stain accumulations, which are attributable mainly to the chemical bonding of dietary chromagens with proteinaceous compounds in the salivary pellicle that coat the tooth surfaces.

2. Extrinsic stain is tenacious, and its prevention or removal requires dentifrices that contain abrasive agents since tooth brushing without such is ineffective.

3. Traditionally, to achieve mechanical cleaning a dentifrice needs three formulation components: 1) an abrasive agent; 2) a thickening agent to hold the abrasive in suspension during brush- ing; and 3) a surface-active agent to facilitate removal of oral debris.

4. Abrasives, which are the principal component contributing to the physical removal of stains, are insoluble substances comprising silicas (e.g., hydrated silica), metal oxides (e.g., alu- mina), phosphates (e.g., calcium pyrophosphate), carbonates (e.g., calcium carbonate), and silicates (e.g., aluminum silicate).

Abstract

• ***Objective:*** *To evaluate, using conventional in vitro procedures, the abrasivity, enamel polishing properties, and stain removal effectiveness of various commercial dentifrices that have a variety of compositions and are marketed for cleaning, whitening, and/or polishing capabilities, and to examine their relationships between stain removal and abrasivity.*

• ***Methods****: The Relative Dentin Abrasivity (RDA) method was used to measure abrasivity, and the Pellicle Cleaning Ratio (PCR) procedure was used to evaluate stain removal performance. A Cleaning Efficiency Index (CEI) was calculated using the RDA and PCR values. Enamel polish was determined on bovine enamel specimens using a reflectometer. All treatments were performed on a V-8 cross-brushing machine using aqueous dentifrice slurries and standard nylon-bristle toothbrushes. A total of 26 dentifrices, purchased at retail, were tested against the American Dental Association (ADA) calcium pyrophosphate reference standard.*

• ***Results:*** *All dentifrices removed extrinsic stain and produced some dentin abrasion, but scores ranged widely between products (from 36 to 269 for RDA and from 25 to 138 for PCR). The majority of dentifrices contained hydrated silicas, and those with high PCR scores often, but not always, had higher RDA values. Products containing other abrasives (e.g., dicalcium phosphate, sodium bicarbonate, and calcium carbonate) generally had lower RDA values and usually lower PCR scores. There were exceptions (e.g., refined kaolin clay) that had high PCR scores and low RDA values, resulting in higher CEI values. Similarly, brushing with all dentifrices significantly increased reflectance readings of acid-dulled teeth, but polish scores also were highly variable among products (ranging from 38 to 97). The polish scores of dentifrices containing hydrated silica varied extensively (ranging from 38 to 80), and the scores of products containing other abrasives fell within this same range, except for dentifrices containing either Fuller's earth (86) or kaolin (97).*

• ***Conclusion:*** *With only a few exceptions, dentifrices marketed as "whitening" products were generally more abrasive to dentin, especially for those containing silicas. Similarly, aside from two non-silica products, those dentifrices advertised for polishing ability generally were no more effective than other products. The relationship between stain-removal ability and abrasivity of dentifrices was not necessarily direct.*

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