**Supplementary Material**

**Research title:** Reversal of root caries with CPP-ACP and fluoride varnish in xerostomia

**Authors:** Ahmed Sleibi, Anwar R Tappuni, Aylin Baysan

|  |  |  |  |
| --- | --- | --- | --- |
| Groups |  Varnishes |  Active Ingredients  | Additional Ingredients |
| Group 1 | MI varnish(GC, Japan) | 5% NaF, CPP-ACP | Polyvinyl Acetate, Hydrogenatedrosin, Ethanol, Silicon Dioxide |
| Group 2 | NUPRO White NaF(DENTSPLY, USA) |  5% NaF | Urethane Methacrylate, Hydrogenated Rosin, Resin, Isopropanol, Sodium, Sucralose, Flavour, Titanium Dioxide |

**Table S1.** Composition of dental varnishes

**Table S2.** Intra and Inter-examiner reliability for study variables.

|  |  |
| --- | --- |
| **Variables/** Intra-examiner | **Correlation (*p* value)** |
| **Oral dryness score++** **USWS buffer++****USWS pH++** | 0.94 (*p*<0.01)\*\*0.86 (*p*=0.01)\*\*0.93 (*p*<0.01)\*\* |
| **Texture+** | 1 (*p*<0.01)\*\* |
| **Cavitation++** | 0.81 (*p*<0.01)\*\* |
| **Colour+** | 0.76 (*p*<0.01)\*\* |
| **Dimension++** | 0.76 (*p*<0.01)\*\* |
| **Hardness+** | 1 (*p*<0.01)\*\* |
| **Gingival distance++** | 0.74 (*p*<0.01)\*\* |
| **Severity index+**  | 0.89 (*p*<0.01)\*\* |
| **DIAGNOdent++** | 0.99 (*p*<0.01)\*\* |

**+** Kappa coefficient, **++** correlation coefficient

\*\*Highly significant *p*<0.01

|  |  |  |
| --- | --- | --- |
| **Variables**/Inter-examiner reliability | **Baseline** **correlation (*p* value)** | **3 or 6 months** **Correlation (*p* value)** |
| **Oral dryness score++** **USWS buffer++****USWS pH++** | 0.95 (*p*<0.01)\*\*0.96 (*p*<0.01)\*\*0.97 (*p*<0.01)\*\* | NA0.86 (*p*<0.01)\*\*0.93 (*p*<0.01)\*\* |
| **Plaque index++****Texture+** | NA1 (*p*<0.01)\*\* | 0.95 (*p*<0.01)\*\*0.64 (*p*=0.02)\* |
| **Cavitation++** | 0.87 (*p*<0.01)\*\* | 0.87 (*p*<0.01)\*\* |
| **Colour+** | 0.78 (*p*<0.01)\*\* | 0.83 (*p*<0.01)\*\* |
| **Dimension++** | 0. 95 (*p*<0.01)\*\* | 0.95 (*p*<0.01)\*\* |
| **Hardness+** | 1 (*p*<0.01)\*\* | 0.79 (*p*<0.01)\*\* |
| **Gingival distance++** | 0.86 (*p*<0.01)\*\* | 0.86 (*p*=0.03)\* |
| **Severity index+** **DIAGNOdent++** | 0.81 (*p*<0.01)\*\*0.94 (*p*<0.01)\*\* | 0.67 (*p*<0.01)\*\*0.98 (*p*<0.01)\*\* |

+ Kappa coefficient, ++ correlation coefficient

\*Significant p<0.05 \*\*Highly significant p<0.01, NA: Non-applicable (not assessed)

**Table S3**. Patients’ demography, social status, saliva test between the two groups at baseline (*p*>0.05).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Patient criteria**  | **Group 1****(n=41)** | **Group 2****(n=39)** | **Over all****(n=80)** | ***p* value** |
| **Age (years)**Mean ±SDMedian (minimum-maximum)**n (%)**<65 years ≥65 years  | 65.70 ±12.7767 (29 – 92)17 (41.46%)24 (58.54%) | 64.38 ±9.3364 (45-82)21 (53.85%)18 (46.15%) | 65.06 ±11.1865 (29 – 92)38 (47.50%)42 (52.50%) | 0.26 |
| **Gender** n (%)Male Female  | 18 (43.90%)23 (56.10%) | 24 (61.50%)15 (38.50%) | 42 (52.50%)38 (47.50%) | 0.11 |
| **Occupation** n (%)Employed Non-employed | 16 (39.03%)25 (60.97%) | 12 (30.77%)27 (69.23%) | 28 (35.00%)52 (65.00%) | 0.43 |
| **Attendance to the dentist** n (%)Regular Irregular  | 28 (68.29%)13 (31.71%) | 23 (58.97%)16 (41.03%) | 51 (63.75%)29 (36.25%) | 0.38 |
| **Conditions causing xerostomia** n (%)Diabetes SSRadiotherapy High blood pressure  | 28 (68.29%)10 (24.39%)1 (2.44%)2 (4.88%) | 23 (58.97%)11 (28.20%)4 (10.26%)1 (2.57%) | 51 (63.75%)21 (26.25%)5 (6.25%)3 (3.75%) | 0.59 |
| **Smoking status** n (%)Smokers Non-smokers Previous smokers  | 4 (9.76%)31 (75.61%)6 (14.63%) | 9 (23.08%)28 (71.79%)2 (5.13%) | 13 (16.25%)59 (73.75%)8 (10.00%) | 0.13 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Removable partial prosthesis** n (%)Wearing denture Non-wearing denture  | 11 (26.83%)30 (73.17%) | 11 (28.21%)28 (71.79%) | 22 (27.50%)58 (72.50%) | 0.89 |
| **Medication** n (%)No medication 1-2 medication 3-4 medication ≥5 medication  | 3 (7.32%) 6 (14.63%)11 (26.83%)21 (51.22%) | 2 (5.13%)5 (12.82%)9 (23.08%)23 (58.97%) | 5 (6.25%)11 (13.75%)20 (25.00%)44 (55.00%) | 0.90 |
| **Toothpaste used during study** (g) Mean ±SD | 363.13 ±152 | 357.56 ±129 | 360.31 ±140 | 0.87 |
| **Saliva test** Mean ±SD**USWS (ml/min)**Number of sample **pH** Number of sample **Buffer capacity** Number of sample  | 0.09 ±0.05416.67 ±0.51386.00 ±0.9335 | 0.10 ±0.06396.52 ±0.65355.63 ±0.96±30 | 0.09 ±0.05806.6 ±0.58735.8 ±0.9665 | 0.590.280.12 |

**Table S4.** Mean±SD or number in percentages for plaque index, clinical criteria of root caries and DIAGNOdent measurements and the difference between the two groups at lesion level at baseline.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **Group 1** **n=73 lesion****(36 patient)** | **Group 2** **n=95 lesion****(36 patient)** | **Overall****n=168 lesion****(72 patient)** | ***p* value** |
| **Plaque index** Mean$\pm SD$ | 1.14 (0.82) | 1.71 (0.87) | 1.47 (0.89) | <0.01\*\* |
| **Roughness** n (%)Rough surface Smooth surface  | 72 (98.63%)1 (1.37%) | 95 (100%)0 | 167 (99.40%)1 (0.60%) | 0.25 |
| **Cavitation** n (%)Non-cavitated 0 mm Cavitated 0.5 mm 1.0 mm 1.5 mm ≥2 mm  | 29 (39.73%)26 (35.62%)9 (12.33%)4 (5.48%)5 (6.85%) | 36 (37.89%)33 (34.74%)15 (15.79%)4 (4.21%)7 (7.37%) | 65 (38.69%)59 (35.12%)24 (14.29%)8 (4.76%)12 (7.14%) | 0.80 |
| **Colour** n (%)Yellow Light brown Dark brown Black  | 059 (80.82%)1 (1.37%)13 (17.81%) | 2 (2.10%)58 (61.05%)7 (7.38%)28 (29.47%) | 2 (1.19%)117 (69.64%)8 (4.76%)41 (24.41%) | 0.02\* |
| **Dimension** ≤ 3 mm n (%) 3-6 mm n (%) 6-9 mm n (%) > 9 mm n (%)  Mean$\pm SD$ mm  | 26 (35.61%)29 (39.73%)3 (4.11%)15 (20.55%)6.85 ±6.35 | 28 (29.47%)31 (32.63%)9 (9.47%)27 (28.43%)7.88 ±6.97 | 54 (32.14%)60 (35.72%)12 (7.14%)42 (25.00%)7.43 ±6.71 | 0.320.19 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hardness** n (%)Soft Leathery Hard  | 073 (100%)0 | 095 (100%)0 | 0168 (100%)0 | NA |
| **Gingival distance** ≤ 1 mm n (%) > 1 mm n (%)Mean$\pm SD $mm | 65 (89.00%)8 (11.00%)0.55 ±0.76 | 85 (89.50%)10 (10.50%)0.53 ±0.96 | 150 (89.30%)18 (10.70%)0.54 ±0.88 | 0.920.38 |
| **Root caries SI** n (%)SI 0 SI 1 SI 2 SI 3 SI 4  | 045 (61.64%)20 (27.40%)8 (10.96%)0 | 044 (46.32%)33 (34.74%)18 (18.94%)0 | 089 (53%)53 (31.5%)26 (14.1%)0 | 0.12 |
| **DIAGNOdent measurements**Mean$\pm SD$  | 42.16 ±25.99 | 51.58 ±27.86 | 47.52 ±27.39 | 0.02\* |

\*Significant p<0.05 \*\*Highly significant p<0.01

**Figure S1.** Mean$\pm SE $changes in lesion dimension during the study.



**Figure S2.** Mean$\pm SE $changes in lesion distance from the gingival margin during the study.

****

**Figure S3.** Mean$\pm SE $changes in DIAGNOdent measurements during the study.

