



AAID Foundation Final Student Grant Report

Grant Report Instructions: The report should not be longer than 10 pages in length. The page limit does not include the draft manuscript.

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Project title: Targeting exRNA biomarkers for Periodontal and Peri-Implant Diseases

Grant Period: 12/2022 - 6/2024

Objectives: Despite their growing popularity, implant failures cannot be predicted with total accuracy. Research on the genetic susceptibility to implant failure will improve treatment planning and reduce overall post-surgical complications. Usage of distinctive salivary profiles for identification of systemic diseases has been widely acknowledged and is increasing in popularity; it is primarily valued for its non-invasive, low-cost and accurate prediction of disease. This project aims to identify salivary exRNA biomarkers to develop signature profiles of periodontal and peri-implant diseases, and will be utilized to develop clinical assays that will identify patients at risk for progression to periodontal and peri-implant diseases. This will improve presurgical treatment planning, reduce the rates of post-surgical complications and increase the standards of patient care.

Project Results: There were no statistically significant differences between toothpaste groups (GI/PI) at any particular time points (Table 6). Within each group, GI appeared to be reduced (compared to baseline) at each time point for toothpaste L but toothpaste M was only significantly reduced at the 12 month vs baseline time (Tables 6-8). No significant changes detected in PI within either toothpaste. When modeled together via a mixed effects model framework (Table 9-10) the GI has a general downtrend observed over time ($p < 0.001$), but there was no toothpaste difference overall or slope difference. For the PI, there was a near significant downtrend observed ($p = 0.054$), but again no significant group or slope difference between groups.

Table 1 Gingival Index of Patients Using Toothpaste L

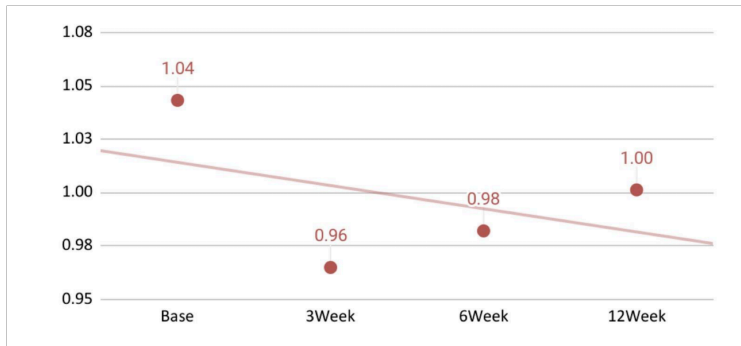


Table 2 Plaque Index of Patients Using Toothpaste L

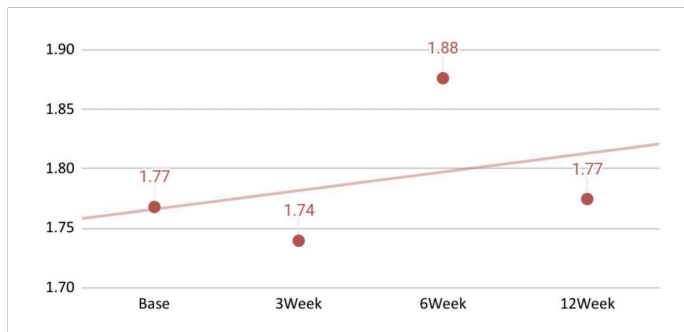


Table 3 Gingival Index of Patients Using Toothpaste M

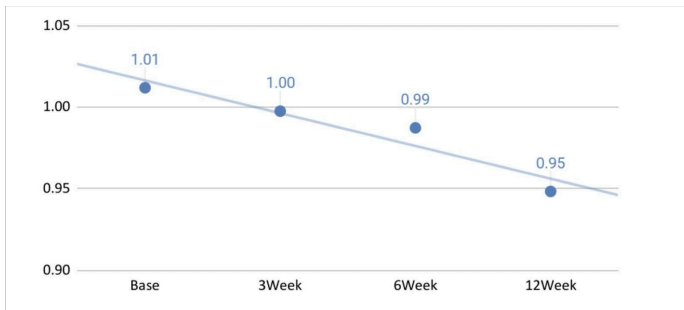


Table 4 Plaque Index of Patients Using Toothpaste M

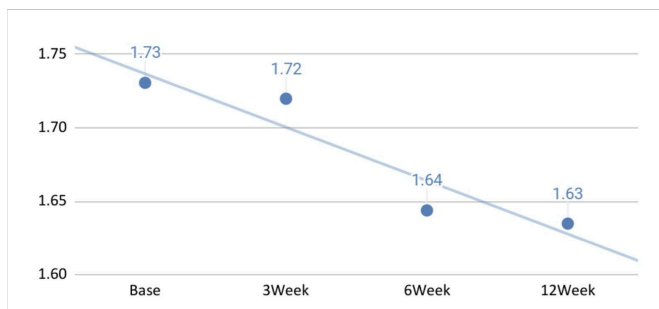


Table 5 Characteristics of the research population. Values are reported as mean (SD) or freq (%) and compared between groups using the t-test or chi-square test

Table 6 shows compares the 3wks, 6 wks, 12 wks to the baseline 0 to see if there are significant differences for both the gingival and the plaque index. While a reduction is noted, this reduction is not statistically significant

	Toothpaste L (n=38)	Toothpaste M (n=37)
GI baseline	1.05 (0.21)	1.03 (0.20)
GI week 3	0.96 (0.15)	1.00 (0.26)
GI week 6	0.97 (0.17)	0.99 (0.14)
GI week 12	0.98 (0.22)	0.95 (0.15)
PI baseline	1.78 (0.39)	1.73 (0.48)
PI week 3	1.72 (0.42)	1.73 (0.47)
PI week 6	1.76 (0.52)	1.66 (0.48)
PI week 12	1.70 (0.57)	1.64 (0.53)

Table 7 shows the p-values computed using the paired t-test for toothpaste L

GI (toothpaste L)	Diff (95% CI)	p-value
0-3	0.09 (0.04 - 0.15)	0.002
0-6	0.08 (0.02 - 0.14)	0.010
0-12	0.07 (0.01 - 0.13)	0.034
Pi (toothpaste L)	Diff (95% CI)	p-value
0-3	0.06 (-0.06 - 0.17)	0.315
0-6	0.01 (-0.16 - 0.19)	0.862
0-12	0.08 (-0.06 - 0.21)	0.246

Table 8 shows the p-values computed using the paired t-test for toothpaste L

GI (toothpaste M)	Diff (95% CI)	p-value
0-3	0.02 (-0.04 - 0.08)	0.440
0-6	0.04 (-0.01 - 0.08)	0.103
0-12	0.08 (0.03 - 0.13)	0.002
Pi (toothpaste M)	Diff (95% CI)	p-value
0-3	0.00 (-0.12 - 0.12)	0.996
0-6	0.08 (-0.04 - 0.19)	0.197
0-12	0.10 (-0.02 - 0.22)	0.115

Table 9 shows mixed Model Results for GI. Time: $p < 0.001$; group: 0.733; group*time: 0.396

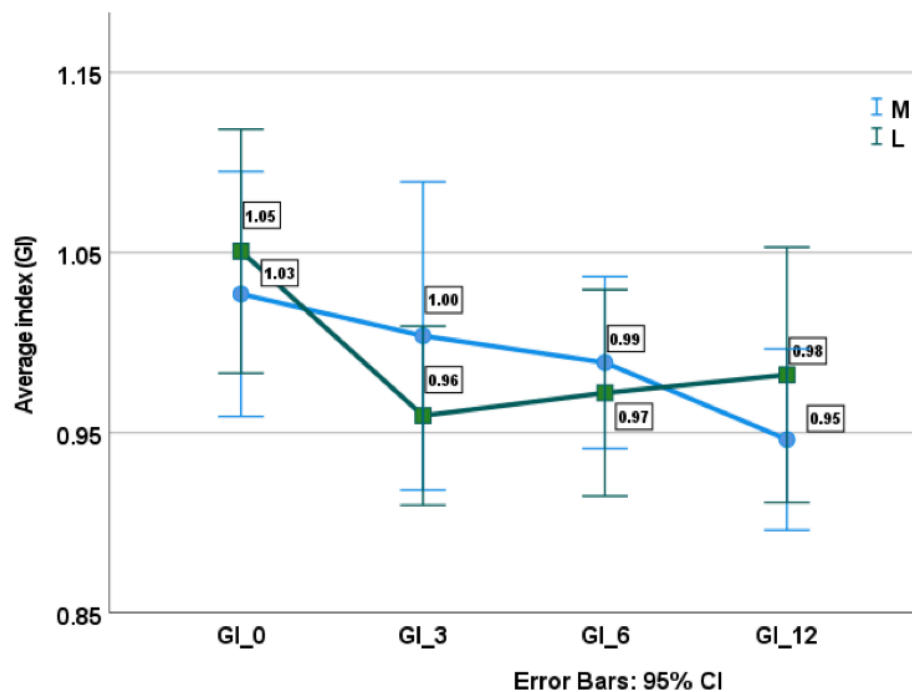
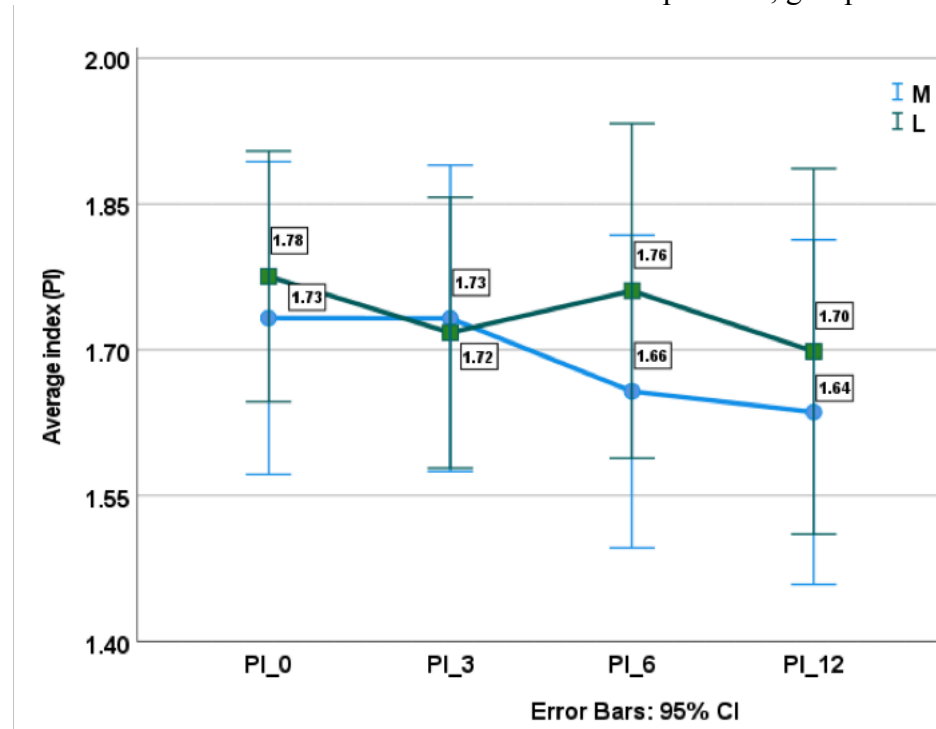


Table 10 shows mixed model results for PI. Time: $p=0.054$; group: 0.790; group*time: 0.592



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Project completion date: 8/2024

AAID News Manuscript Submission Date: In-progress

Project expenses: \$2028.56, see award closeout form