

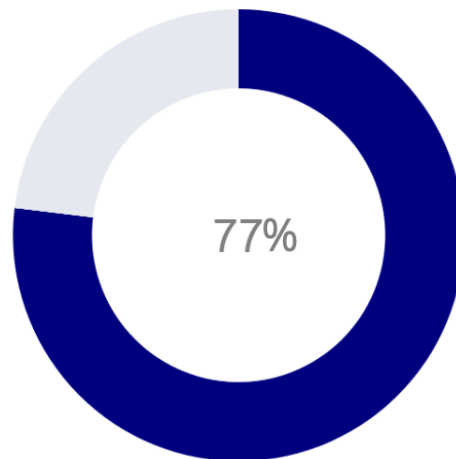
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Proprietary and Confidential

Abstract

The study conducted by Ellipse Analytics (EA) aimed to evaluate the effectiveness of GuruNanda Pulling Oil in enhancing teeth whitening, breath freshness, and overall oral hygiene compared to five leading mouthwashes. A single-blind crossover clinical trial was conducted over a three-week period with a two-day washout period between each week. The study found that GuruNanda Pulling Oil was more effective in improving subjective perception of oral health and product satisfaction than some competitor mouthwashes. Additionally, 77% of the participants who used GuruNanda Pulling Oil indicated they "Like" GuruNanda Pulling Oil. Participants who prefer natural, organic, or homeopathic products also reported higher satisfaction with GuruNanda Pulling Oil. These findings were used to develop label claims recommendations and can help inform the development and marketing of GuruNanda's oral health products. Future studies by EA can investigate label claim substantiation for a whitening power claim and identify a marketing approach to entice trial from consumers, as product satisfaction improves after several uses.



**77% OF PARTICIPANTS
LIKED GURUNANDA
PULLING OIL (N=20/26)**

Executive Summary

Introduction

Good oral health is an essential aspect of overall health, and using mouthwash has been proven to be an effective complement to brushing and flossing. GuruNanda's Pulling Oil is formulated for effectiveness in cleaning teeth and freshening breath. The objective of this study was to evaluate the effectiveness of GuruNanda Pulling Oil in enhancing teeth whitening, breath freshness, and overall oral hygiene compared to five leading mouthwashes. Ellipse Analytics (EA) completed this analysis using the consumers who like GuruNanda's Pulling Oil as determined by consumer insight data collected in the Oral Care Study.

Background

ISO 17025 accredited chemistry laboratory EA tested 5 competitor brands of mouthwashes and 1 brand of pulling oil. GuruNanda's Pulling Oil, is a unique formula that has been proven to be effective in cleaning teeth and freshening breath. However, the effectiveness of GuruNanda Pulling Oil in comparison to other leading mouthwashes has not been studied comprehensively. All competitor products were selected by GuruNanda and purchased by EA from the commercial market and shipped directly to EA headquarters. EA verified the products were unopened and received in good condition and unopened upon receipt. Testing was performed according to EA's methodology, which was informed by best practices in the space. Ellipse Analytics' conclusions in this matter reflect its own interpretation of the data and exist independent of any compensation paid for this work.

Methodology

A single-blind crossover clinical trial was conducted over a three-week period with a two-day washout period between each week. Participants discontinued their personal oral care routine during the study and were instructed to use each mouthwash or pulling oil twice daily after brushing their teeth. During each study week, participants used the assigned mouthwash along with provided toothbrush/toothpaste. At the end of each week, participants took a questionnaire and discontinued use of the provided products for two days. Participants completed a questionnaire at the end of each week regarding the effectiveness of the mouthwash or pulling oil's performance on teeth whitening, breath freshness, and overall mouth cleanliness.

Results

The objective of this study was to evaluate the effectiveness of GuruNanda Pulling Oil as compared to five leading mouthwashes. A total of 78 observations were collected across the five mouthwashes and GuruNanda Pulling Oil. The study found that GuruNanda Pulling Oil increased participants' perception of their overall oral health more than some competitor mouthwashes. This effect was most pronounced among participants who prefer natural, organic, or homeopathic products, with these participants reporting higher perceptions of whitening (42% vs 35%, N=8, Top 3 Box agreement), breath freshness (58% vs 50%, N=8, Top 3 Box agreement), mouth cleanliness (74% vs 62%, N=14, Top 3 Box agreement), satisfaction with product use (63% vs 54%, N=12, Top 3 Box satisfaction), and interest in continuing use (47% vs 38%, N=9, Top 3 Box interest) of GuruNanda Pulling Oil as part of their oral care regimen. 77%

of participants that used GuruNanda Pulling Oil “liked” the product as determined by agreement with product effectiveness and 90% of those participants indicate that they find GuruNanda effective without causing dental sensitivity. A label claim for GuruNanda Pulling Oil could be centered around its effectiveness and high satisfaction ratings with consumers after a 5 day trial period (77% endorsement, N=20), especially among those who prefer natural products (84% endorsement, N=16). Additionally, GuruNanda Pulling Oil improved perceptions of mouth cleanliness without causing dental sensitivity. The interpretation of these data is that GuruNanda Pulling Oil is superior to 4 out of 5 competitor mouthwashes at improving mouth cleanliness *without* increasing tooth sensitivity. This could be used as a label claim to promote the product's ability to improve perceptions of overall mouth cleanliness without increasing dental sensitivity. However, the study has limitations due to a small sample size and the use of self-reported data. Future studies by EA can investigate label claim substantiation for a whitening power claim and identify a marketing approach to entice trial from consumers, given that participants tend to like it only after they've used it for up to 5 days.

Summary of Label Claim Recommendations.

Label Claim Metric	Rational
Improves perceptions of overall dental hygiene	77% of participants who used GuruNanda Pulling Oil felt that the product improved dental hygiene in assessed metrics (whiteness, freshness, cleanliness, satisfaction, interest in continuing use, and lack of dental sensitivity).
Gentle on teeth and gums	GuruNanda Pulling Oil showed a lower incidence of dental sensitivity than leading competitors (12% vs. 30%-50%), suggesting that the product is gentle on teeth and gums while improving oral hygiene.
Improves perceptions of mouth cleanliness	70% of those who liked GuruNanda Pulling Oil reported an improvement in mouth cleanliness, and 58% felt that the product increased mouth cleanliness without making their teeth overly sensitive. GuruNanda Pulling Oil was superior to 4 out of 5 competitors at improving mouth cleanliness without increasing tooth sensitivity.
Improves perceptions of teeth whitening	GuruNanda Pulling Oil was ranked second for improvement in teeth whiteness among all six brands tested, with 45% of those who liked the product reporting the most improvement in teeth whiteness. This suggests that the product could be marketed as an effective solution for improving perceptions of whitening teeth.
Improves perceptions of fresh breath	60% of those who liked GuruNanda Pulling Oil reported an improvement in freshness of breath. This could be used as a label claim to promote the product's ability to improve perceptions of breath freshness.

Introduction

Oral health is an important aspect of overall health and mouthwash has been shown to be an effective adjunct to brushing and flossing^{1,2}. In recent years, the market for mouthwash has expanded significantly due to increased awareness of oral health³. GuruNanda's Pulling Oil is formulated for effectiveness in cleaning teeth and freshening breath. In this study, EA aimed to identify the consumer profile of individuals who liked GuruNanda's Pulling Oil using consumer insight data collected in an Oral Care Study. The aim of this study was to evaluate the effectiveness of GuruNanda Pulling Oil compared to five leading mouthwashes in enhancing the perception of teeth whitening, breath freshness, and overall oral hygiene.

Methods

This study was a single-blind crossover clinical trial conducted over a three-week period with a two day washout period in-between each week (five days use, two days washout, see Figure 1). GuruNanda Pulling Oil and all competitor mouthwashes were provided in identical bottles with no identifying labels to maintain single-blind conditions. See Ethical Considerations below for informed consent.

Participants were asked to discontinue their personal oral care routine during the 5 day protocol each week for the duration of the study. Participants were instructed to use GuruNanda Pulling Oil for the first 5 days of week 1, and were randomly assigned to use one competitor mouthwash for the first 5 days of week 2, and a different competitor mouthwash for the first 5 days of week 3. Participants were provided manufacturer instructions for each mouthwash or pulling oil (see Appendix B). After the first 5 days of each week, participants completed a questionnaire regarding the effectiveness of the mouthwash or pulling oil's performance on teeth whitening, breath freshness, and overall mouth cleanness. Participants were compensated \$100 at the completion of the study.

Participants

Participants were recruited through email and required to be at least 18 years of age. A total of 26 participants were enrolled in the study. All participants were assigned GuruNanda Pulling Oil for Week 1 / Phase 1 in order to maximize participant retention to ensure an appropriate sample size in the evaluation of GuruNanda Pulling Oil. Thereafter, participants were randomized to evaluate 2 of the 5 competitor mouthwashes for subsequent weeks (see Figure 1).

Study Design

Participants were all assigned to GuruNanda Pulling Oil in Week 1 / Phase 1 and then randomly assigned to mouthwash A, B, C, D, or E (i.e., Listerine Antiseptic Mouthwash Cool Mint, ACT Anticavity Mouthwash, Crest Anticavity/Antigingivitis, Therabreath Fresh Breath Mouthwash, Colgate Whitening Mouthwash) for Week 2 / Phase 2 and Week 3 / Phase 3 such

¹ Ciancio, S. (2003). Improving oral health: current considerations. *Journal of Clinical Periodontology*, 30, 4-6.

² Aspinall, S. R., Parker, J. K., & Khutoryanskiy, V. V. (2021). Oral care product formulations, properties and challenges. *Colloids and Surfaces B: Biointerfaces*, 200, 111567.

³ Zero, D. T. (2006). Dentifrices, mouthwashes, and remineralization/caries arrestment strategies. In *BMC Oral health* (Vol. 6, No. 1, pp. 1-13). BioMed Central.

that all participants evaluated GuruNanda and 2 of 5 competitors. The order of mouthwash use was randomly assigned using a counter-balanced systemization. See Figure 1 for study design schematic and Table 1 for sample size by mouthwash or pulling oil.

- Mouthwash A: Listerine Antiseptic Mouthwash Cool Mint
- Mouthwash B: ACT Anticavity Mouthwash
- Mouthwash C: Crest Anticavity/Antigingivitis
- Mouthwash D: Therabreath Fresh Breath Mouthwash
- Mouthwash E: Colgate Whitening Mouthwash
- Mouthwash G: GuruNanda Pulling Oil

Figure 1. Study Design of GuruNanda’s Oral Care Clinical Trial.



Table 1. Sample size for each mouthwash or pulling oil used in the study

Count	Phase 1 / Week 1	Phase 2 / Week 2	Phase 3 / Week 3	NET
Listerine: <i>Antiseptic Mouthwash Cool Mint</i>	-	4	5	N = 9
ACT: <i>Anticavity Mouthwash</i>	-	8	4	N = 12
Crest: <i>Anticavity/Antigingivitis</i>	-	6	3	N = 10
Therabreath: <i>Fresh Breath Mouthwash</i>	-	5	5	N = 10
Colgate: <i>Whitening Mouthwash</i>	-	3	8	N = 11
GuruNanda: <i>Pulling Oil</i>	26	-	-	N = 26

Table 1 summarizes the sample size for each mouthwash or pulling oil used in the study. A total of 78 observations were collected across the five mouthwashes and one pulling oil. GuruNanda Pulling Oil had the largest sample size (N=26) as all participants evaluated GuruNanda.

Intervention

The study compared the effectiveness of GuruNanda Pulling Oil against 5 different competitor mouthwashes (Listerine Antiseptic Mouthwash Cool Mint, ACT Anticavity Mouthwash, Crest Anticavity/Antigingivitis, Therabreath Fresh Breath Mouthwash, Colgate Whitening Mouthwash) for improving oral health outcomes. All mouthwashes as well as GuruNanda's Pulling Oil were provided in identical bottles with no brand identifying labels to maintain single-blind conditions. Participants were instructed to use the provided mouthwash or pulling oil twice daily after brushing their teeth for all 3 Phases.

Participant Protocol

The protocol described an Oral Care Study aimed at measuring the effectiveness of different oral care brands on performance measures like teeth whitening, breath freshness, and overall mouth cleanliness (see Appendix A). Participants followed a 5-day/week oral care routine using products provided by Ellipse Analytics (EA) for a total of 3 weeks. Participants completed a 3-minute survey about product satisfaction at the end of each week (Fridays). The study required participants to discontinue personal oral care routine, whitening treatments, and replace personal oral care products with products provided by EA during the 5-day protocol each week for 3 weeks. The protocol also included detailed instructions for brushing and mouthwash or pulling oil use, see Appendix B.

Data Collection

Participants completed a participant intake form that collected demographic information as well as information about their oral health habits. They also completed a survey at the end of each week that assessed their satisfaction with the mouthwash or pulling oil they used as well as their perception of the mouthwash or pulling oil's effectiveness in improving teeth whiteness, freshness of breath, and overall cleanliness of mouth. Participants were also asked about any increases in dental sensitivity, ease of use, and willingness to replace traditional mouthwash with GuruNanda's Pulling Oil (see Appendix A for the definition of variables and questionnaires used in the study).

Participant Intake Form Detail

The Participant Intake Form for the Oral Care Study at EA was a voluntary questionnaire that collected personal information and oral care habits. The form included questions on the participant's name, phone number, email, year of birth, and gender identity. It also asked about their teeth cleaning habits, including how often they brushed, when they brushed, and for how long, as well as their use of mouthwash or pulling oil and/or floss. The form also asked about the frequency of dental visits, teeth whitening treatments, coffee or tea consumption, shopping habits, and preferences for natural products. Additionally, participants were asked to list any allergies they had. All personal information collected remained confidential.

Data Analysis

A descriptive analysis was conducted to identify any demographic or psychographic patterns to determine the participant persona for those who liked GuruNanda's Pulling Oil. Descriptive statistics were used to summarize the questionnaire results. A Chi-Square test of independence (significance cutoff of $p < 0.05$) was conducted to compare the effectiveness and user satisfaction of GuruNanda's Pulling Oil when compared to the competitor mouthwashes. This analysis included the evaluation of Likert Scale items. A Likert scale is a type of rating scale used in surveys to measure people's attitudes, opinions, or perceptions. For example, respondents are asked to indicate their level of agreement or disagreement with a series of statements using a range of response options, such as "strongly agree," "agree," "neutral," "disagree," or "strongly disagree." When analyzing Likert scale questions, EA used a technique called the "Top Box" method, where the "strongly agree" and "agree" responses are grouped together to create a "Top 2 Box" score. Additionally, EA grouped the "strongly agree," "agree," and "somewhat agree" responses together to create a "Top 3 Box" score for the competitive assessments. These methods provide a succinct summary to compare the overall level of agreement or positive response to a particular question or set of questions.

For the purposes of this analysis, EA filtered the dataset to include only consumers who liked GuruNanda Pulling Oil based on their selection of a "Top 2 Box" item for at least 1 of the following variables: improving teeth whiteness, freshness of breath, overall mouth cleanliness, overall satisfaction, interest in continuing to use, ease of swishing, and agreement with the statement about willingness to use the Pulling Oil in their future oral care routines. Participants were excluded from this profile if they indicated they were "very uninterested" in continuing GuruNanda Pull Oil product use.

Ethical Considerations:

The study's design, protocol, and survey questionnaire were approved by GuruNanda prior to study commencement. Informed consent was obtained from all participants prior to enrollment in the study, see Appendix C. Participants were informed of their right to withdraw from the study at any time without penalty and were compensated \$100 for study participation.

Results

Demographic and Psychographic Profile

Out of the 26 participants who took part in the study, 77% (N=20) liked GuruNanda Pulling Oil. Of those who liked it, 50% (N=10) were female and 50% (N=10) were male. The average age of those who liked GuruNanda Pulling Oil was 33 years, with a range of 24 to 59 years. Among those who liked GuruNanda Pulling Oil, 80% (N=16) indicated that they prefer to use natural products and shop at Whole Foods or other natural stores as compared to only 50% (N=3) of participants that did not like GuruNanda Pulling Oil. All participants who liked GuruNanda Pulling Oil had never used pulling oil as part of their oral care regimen (100%). Of those who liked it, 50% (N=10) were familiar with the natural alternative properties of Pulling Oil to mouthwash.

Satisfaction and interest in using GuruNanda Pulling Oil was most pronounced among participants who prefer natural, organic, or homeopathic products. As compared to all participants who Like GuruNanda, participants who reported Liking GuruNanda and shopping at natural stores / preferring natural products report higher perceptions of whitening (50% vs 45%, N=8, Top 3 Box agreement), breath freshness (63% vs 60%, N=10, Top 3 Box agreement), mouth cleanliness (75% vs 70%, N=14, Top 3 Box agreement), satisfaction with product use (75% vs 70%, N=12, Top 3 Box satisfaction), interest in continuing use (56% vs 50%, N=9, Top 3 Box interest) of GuruNanda Pulling Oil as part of their oral care regimen, see Table 2.

Table 2. Summary of perception comparisons after using GuruNanda Pulling Oil between participants who used GuruNanda Pulling Oil (N=26), participants who like GuruNanda Pulling Oil (N=20), and those who Like GuruNanda Pulling Oil and Prefer Natural Products (N=16).

Column % Count	Used GuruNanda Pulling Oil (N=26)	Like GuruNanda Pulling Oil (N=20)	Like GuruNanda Pulling Oil + Prefer Natural Products (N=16)
Top 3: Whitening	35%	45%	50%
	9	9	8
Top 3: Fresh Breath	50%	60%	63%
	13	12	10
Top 3: Mouth Cleanliness	62%	70%	75%
	16	14	12
Top 3: Satisfaction	54%	70%	75%
	14	14	12
Top 3: Interest in Continuing Use	38%	50%	56%
	10	10	9
Never: Dental Sensitivity	88%	90%	88%
	23	18	14

Table 2 shows a comparison of the satisfaction and interest in using GuruNanda Pulling Oil between participants who prefer natural, organic, or homeopathic products, all participants who like GuruNanda, and all participants that used GuruNanda. The data indicates that participants who like GuruNanda with a preference for natural products report higher perceptions of whitening, breath freshness, mouth cleanliness, satisfaction with product use, and interest in continuing use of GuruNanda Pulling Oil as part of their oral care regimen compared to all participants who like GuruNanda or used GuruNanda. The percentages and count of participants who reported Top 3 Box agreement for each category are shown.

Participant Evaluation of GuruNanda Pulling Oil Product Performance

In terms of current oral care habits, 75% (N=15) of those who liked GuruNanda Pulling Oil currently use a mouthwash or oral rinse, and 30% (N=6) sometimes or always use whitening treatments. Participants who liked GuruNanda Pulling Oil reported higher effectiveness rates for improving teeth whiteness (45%, N=9, Top 3 Box agreement), freshness of breath (60%, N=12,

Top 3 Box agreement), and overall cleanliness of the mouth (70%, N=14, Top 3 Box agreement). They also reported higher satisfaction rates for the pulling oil used during the study (70%, N=14, Top 3 Box satisfaction). The majority of participants (90%, N=18) who liked GuruNanda Pulling Oil did not report experiencing any increases in dental sensitivity with the use of the pulling oil. Additionally, they had a higher satisfaction rate for the toothbrush provided for the study (85%, N=17, Top 3 Box) as compared to only 50% (N=3) satisfaction amongst participants who did not like GuruNanda Pulling Oil.

Furthermore, participants who liked GuruNanda Pulling Oil reported higher interest rates for continuing to use the pulling oil in the future (50%, N=10, Top 3 Box). 42% of participants who liked GuruNanda Pulling Oil stated that they would be willing to partially or fully replace their use of traditional mouthwash with pulling oil at least 50% of the time or more. Lastly, 70% of participants generally agreed (Top 3 Box) that it was easier to use the pulling oil on day 5 compared to day 1, and 20% indicated that it was at least somewhat easy to swish the liquid in their mouth for up to 5 minutes. Of the 26 consumers who used GuruNanda, 73% (n=19 of 26) are natural consumers. 84% (n=16 of 19) of natural consumers liked GuruNanda Pulling Oil (Top 2 Box) vs 57% (N=4 of 7) of consumers with no natural preference (see Table 3). These findings suggest that GuruNanda Pulling Oil is well-liked among participants who prefer natural products and that it is effective in enhancing their perception of teeth whitening, breath freshness, mouth cleanliness, satisfaction with product use and interest in continuing use (see Tables 4-9).

Table 3. Liking of GuruNanda Pulling Oil and Use of GuruNanda Pulling Oil by Preference for Natural Products or Not.

Column % Row % Count	Natural Preference	No Natural Preference	Total
Like GuruNanda Pulling Oil	84%	57%	77%
	80%	20%	100%
	16	4	20
Used GuruNanda Pulling Oil	100%	100%	100%
	73%	27%	100%
	19	7	26

Liked GuruNanda Pulling Oil by Natural Product Preference. Observation sample size = from 20 to 26; total number of observations = 26; 95% confidence level ($p < 0.05$). Shown are column %, then row %, then count.

Competitive Analysis

The consumer profile "Like GuruNanda Pulling Oil" (N=20 of 26) was analyzed against all other competitors using a "Top 3 Box" method. This method involves grouping together the top three response options on the Likert scale item for data analysis (5-7 item scale), see Method Section: Data Analysis for details on "Top Box" methods and example of scale item

bounds. The Likert scale items that were used in this study included variables such as improving teeth whiteness, freshness of breath, overall mouth cleanliness, overall satisfaction, interest in continuing to use, ease of swishing, and agreement with the statement about willingness to use the Pulling Oil in their future oral care routines.

GuruNanda Pulling Oil was ranked against 5 competitor mouthwashes for six total brands. GuruNanda Pulling Oil was ranked second (out of six brands) for improving teeth whiteness, tied for fourth for freshness of breath, third for improving mouth cleanliness, and first for not causing dental sensitivity. In terms of overall satisfaction, GuruNanda Pulling Oil was ranked fifth, but 70% of those who liked it were satisfied with the product overall. Additionally, 50% of those who liked GuruNanda Pulling Oil were interested in continuing to use the product. Comparatively, the use of GuruNanda Pulling Oil ranked similarly in terms of improvement in teeth whiteness, freshness of breath, and mouth cleanliness, but was just as effective at preventing dental sensitivity. 62% of those who used GuruNanda Pulling Oil were satisfied with the product overall, and 38% were interested in continuing to use it. 70% of those who like GuruNanda Pulling Oil were satisfied with the product overall, and 50% were interested in continuing to use it.

Table 4. Whiteness GuruNanda Pulling Oil was ranked 2nd for improvement in teeth whiteness amongst all 6 brands: 45% of those who Like GuruNanda Pulling Oil saw an improvement in teeth whiteness. 35% of those who used GuruNanda Pulling Oil saw an improvement in teeth whiteness. **Significant:** Participants who liked GuruNanda Pulling Oil significantly differed in their overall perception of whiteness. An examination of this data pattern suggests that a higher percentage of these participants indicated Gurunanda Pulling Oil increased their perception of teeth whiteness amongst all groups (Chi-Square = 4.129, p = 0.04).

Column % Count	Listerine	ACT	Crest	Therabreath	Colgate	GuruNanda Pulling Oil	Like GuruNanda Pulling Oil
Top 3: Excellent + Good + Above average	33%	25%	20%	40%	27%	35%	45% ↑
	3	3	2	4	3	9	9
Average/Neutral	56%	67%	60%	30%	45%	31%	30%
	5	8	6	3	5	8	6
Bottom 2: Below average + Poor	11%	8%	20%	30%	27%	35%	25%
	1	1	2	3	3	9	5
Total	100%	100%	100%	100%	100%	100%	100%
	9	12	10	10	11	26	20

How effective was the mouthwash or pulling oil you used this week for improving your teeth whiteness? Observation sample size = from 20 to 78; total number of observations = 78; 95% confidence level (p < 0.05). Likert scale bounds: Excellent, Good, Above Average, Average, Below Average, Poor.

Table 5. Freshness of Breath GuruNanda Pulling Oil was tied for 4th for improvement in freshness of breath amongst all 6 brands: 60% of those who Like GuruNanda Pulling Oil saw an improvement in freshness of breath. 50% of those who used GuruNanda Pulling Oil saw an improvement in freshness of breath. **Significant:** Participants who used Therabreath significantly differed in their overall perception of breath freshness. An examination of this data pattern suggests a higher percentage of these participants indicated Therabreath decreased their perception of breath freshness amongst all groups (Chi-Square = 6.117, p = 0.01).

Column % Count	Listerine	ACT	Crest	Therabreath	Colgate	GuruNanda Pulling Oil	Like GuruNanda Pulling Oil
Top 3: Excellent + Good + Above average	67%	50%	80%	30%	55%	50%	60%
	6	6	8	3	6	13	12
Average/Neutral	22%	33%	20%	20%	27%	27%	25%
	2	4	2	2	3	7	5
Bottom 3: Below average + Poor + Very poor	11%	17%	0%	50% ↑	18%	23%	15%
	1	2	0	5	2	6	3
Total	100%	100%	100%	100%	100%	100%	100%
	9	12	10	10	11	26	20

How effective was the mouthwash or pulling oil you used this week for improving the freshness of your breath? Observation sample size = from 20 to 78; total number of observations = 78; 95% confidence level (p < 0.05). Likert scale bounds: Excellent, Good, Above Average, Average, Below Average, Poor.

Table 6. Mouth Cleanliness GuruNanda Pulling Oil was ranked 3rd for improvement in mouth cleanliness amongst all 6 brands: 70% of those who Like GuruNanda Pulling Oil saw an improvement in mouth cleanliness. 62% of those who used GuruNanda Pulling Oil saw an improvement in mouth cleanliness. **Significant:** Participants who used Therabreath significantly differed in their overall perception of mouth cleanliness. An examination of this data pattern suggests a that lower percentage of these participants indicated Therabreath improved their perception of mouth cleanliness (Chi-Square = 6.184, p = 0.01) and a higher percentage indicated it was *average* in improving mouth cleanliness (Chi-Square = 5.726, p = 0.02).

Column % Count	Listerine	ACT	Crest	Therabreath	Colgate	GuruNanda Pulling Oil	Like GuruNanda Pulling Oil
Top 3: Excellent + Good + Above average	67%	58%	80%	20% ↓	45%	62%	70%
	6	7	8	2	5	16	14
Average/Neutral	22%	33%	20%	60% ↑	27%	19%	20%

	2	4	2	6	3	5	4
Bottom 3: Below average + Poor + Very poor	11%	8%	0%	20%	27%	19%	10%
	1	1	0	2	3	5	2
Total	100%	100%	100%	100%	100%	100%	100%
	9	12	10	10	11	26	20

How effective was the mouthwash or pulling oil you used this week for improving your mouth cleanliness? Observation sample size = from 20 to 78; total number of observations = 78; 95% confidence level ($p < 0.05$). Likert scale bounds: Excellent, Good, Above Average, Average, Below Average, Poor.

Table 7. Satisfaction GuruNanda Pulling Oil was ranked 5th for overall satisfaction amongst all 6 brands: 70% of those who Like GuruNanda Pulling Oil were satisfied with the product overall. 62% of those who used GuruNanda Pulling Oil were satisfied with the product overall.

Significant: Participants who used Therabreath significantly differed in their overall perception of satisfaction. An examination of this data pattern suggests that a lower percentage of these participants indicated they were satisfied with Therabreath amongst all groups (Chi-Square = 5.29, $p = 0.02$).

Column % Count	Listerine	ACT	Crest	Therabreath	Colgate	GuruNanda Pulling Oil	Like GuruNanda Pulling Oil
Top 3: Very Satisfied + Satisfied + Slightly Satisfied	78%	75%	90%	30% ↓	64%	54%	70%
	7	9	9	3	7	14	14
Neutral	11%	17%	10%	30%	9%	19%	20%
	1	2	1	3	1	5	4
Bottom 3: Dissatisfied + Slightly Dissatisfied + Very Dissatisfied	11%	8%	0%	40%	27%	27%	10%
	1	1	0	4	3	7	2
Total	100%	100%	100%	100%	100%	100%	100%
	9	12	10	10	11	26	20

How satisfied are you with this week's mouthwash or pulling oil overall? Observation sample size = from 20 to 78; total number of observations = 78; 95% confidence level ($p < 0.05$). Likert scale bounds: Very Satisfied, Satisfied, Slightly Satisfied, Neutral, Slightly Dissatisfied, Dissatisfied, Very Dissatisfied.

Table 8. Interest in Continuing Use GuruNanda Pulling Oil was ranked 5th for interest in continued use amongst all 6 brands: 50% of those who Like GuruNanda Pulling Oil were interested in continuing use of the product. 38% of those who used GuruNanda Pulling Oil were interested in continuing use of the product. **Significant:** Participants who used Therabreath

significantly differed in their overall interest in continuing product use. An examination of this data pattern suggests that a lower percentage of these participants indicated they were interested in using Therabreath amongst all groups (Chi-Square = 4.129, p = 0.04). Participants who used GuruNanda Pulling Oil also significantly differed in their overall interest in continuing product use. An examination of this data pattern suggests that a higher percentage of these participants indicated they were not interested in continuing use of Gurunanda Pulling Oil (Chi-Square = 5.11, p = 0.02).

Column % Count	Listerine	ACT	Crest	Therabreath	Colgate	GuruNanda Pulling Oil	Like GuruNanda Pulling Oil
Top 3: Very Interested + Interested + Slightly Interested	67%	67%	70%	20% ↓	55%	38%	50%
	6	8	7	2	6	10	10
Neutral	11%	8%	10%	10%	9%	0%	0%
	1	1	1	1	1	0	0
Bottom 3: Slightly Uninterested + Uninterested + Very Uninterested	22%	25%	20%	70%	36%	62% ↑	50%
	2	3	2	7	4	16	10
Total	100%	100%	100%	100%	100%	100%	100%
	9	12	10	10	11	26	20

How interested are you in continuing to use this week’s mouthwash or pulling oil as part of your oral care routine? Observation sample size = from 20 to 78; total number of observations = 78; 95% confidence level (p < 0.05). Likert scale bounds: Very Interested, Interested, Slightly Interested, Neutral, Slightly Uninterested, Uninterested, Very Uninterested.

Table 9. Dental Sensitivity GuruNanda Pulling Oil was ranked 1st for *not* causing dental sensitivity amongst all 6 brands: 90% of those who Like GuruNanda Pulling Oil had no increases in dental sensitivity. 88% of those who used GuruNanda Pulling Oil had no increases in dental sensitivity. **Significant:** Participants who used Listerine significantly differed in their experience of dental sensitivity. An examination of this data pattern suggests that a higher percentage of these participants indicated they sometimes experienced dental sensitivity with Listerine amongst all groups (Chi-Square = 5.886, p = 0.02). Participants who used ACT also significantly differed in their experience of dental sensitivity. An examination of this data pattern suggests that a higher percentage of these participants indicated they occasionally experienced dental sensitivity with ACT (Chi-Square = 3.881, p = 0.049). Finally, participants using GuruNanda Pulling Oil also significantly differed in their experience of dental sensitivity. An examination of this data pattern suggests that a higher percentage of these participants indicated they did *not* experience dental sensitivity while using Gurunanda Pulling Oil (Chi-Square = 6.043, p = 0.01).

Column % Count	Listerine	ACT	Crest	Therabreath	Colgate	GuruNanda Pulling Oil	Like GuruNanda Pulling Oil
Never	56%	50%	70%	70%	64%	88% ↑	90%
	5	6	7	7	7	23	18
Rarely (less than 10% of the time)	0%	25%	10%	30%	18%	8%	10%
	0	3	1	3	2	2	2
Occasionally (about 30% of the time)	11%	17% ↑	10%	0%	0%	0%	0%
	1	2	1	0	0	0	0
Sometimes (about 50% of the time) or more often	33% ↑	8%	10%	0%	18%	4%	0%
	3	1	1	0	2	1	0
Total	100%	100%	100%	100%	100%	100%	100%
	9	12	10	10	11	26	20

Did you experience any increases in dental sensitivity with the use of this week's mouthwash or pulling oil? Observation sample size = from 20 to 78; total number of observations = 78; 95% confidence level ($p < 0.05$). Likert scale bounds: Never (0% of the time), Rarely (less than 10% of the time), Occasionally (about 30% of the time), Sometimes (about 50% of the time), Frequently (about 70% of the time), Usually (about 90% of the time), Always (100% of the time).

Label Claim Recommendations

Table 10. Summary of Label Claim Recommendations.

Label Claim Metric	Rational
Improves perceptions of overall dental hygiene	77% of participants who used GuruNanda Pulling Oil felt that the product improved dental hygiene in assessed metrics (whiteness, freshness, cleanliness, satisfaction, interest in continuing use, and lack of dental sensitivity).
Gentle on teeth and gums	GuruNanda Pulling Oil showed a lower incidence of dental sensitivity than leading competitors (12% vs. 30%-50%), suggesting that the product is gentle on teeth and gums while improving oral hygiene.
Improves perceptions of mouth cleanliness	70% of those who liked GuruNanda Pulling Oil reported an improvement in mouth cleanliness, and 58% felt that the product increased mouth cleanliness without making their teeth overly sensitive. GuruNanda Pulling Oil was superior to 4 out of 5 competitors at improving mouth cleanliness without increasing tooth sensitivity.
Improves perceptions of teeth whitening	GuruNanda Pulling Oil was ranked second for improvement in teeth whiteness among all six brands tested, with 45% of those who liked the product reporting the most improvement in teeth whiteness. This suggests that the product could be marketed as an effective solution for improving perceptions of whitening teeth.

Improves perceptions of fresh breath	60% of those who liked GuruNanda Pulling Oil reported an improvement in freshness of breath. This could be used as a label claim to promote the product's ability to improve perceptions of breath freshness.
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Improves perceptions of overall dental hygiene / Gentle on teeth and gums

There are several label claims that could be made for marketing purposes of GuruNanda Pulling Oil. 77% of participants that used GuruNanda felt the product improved dental hygiene overall (i.e., whiteness, freshness, cleanliness, satisfaction, interest in continuing use, and lack of dental sensitivity). 90% of these participants indicated GuruNanda Pulling Oil improved oral hygiene without ever increasing dental sensitivity. When looking at all participants who used GuruNanda Pulling Oil (N=26), there is a significant difference in the experience of dental sensitivity with 12% (N=3) participants reporting they rarely experienced dental sensitivity (~10% of the time). An examination of these data demonstrates that a lower percentage of people reported any experience of dental sensitivity as compared to leading competitors (Chi-Square = 6.043, $p = 0.01$), see Supplemental Table 1 in Appendix D. This could be used as a label claim to promote the product's gentleness on teeth and gums while improving satisfaction or oral hygiene.

Improves perceptions of mouth cleanliness

Additionally, GuruNanda Pulling Oil was ranked third for improvement in mouth cleanliness, with 70% of those who liked GuruNanda Pulling Oil reporting an improvement in mouth cleanliness. Additional analysis shows 58% of consumers felt that GuruNanda Pulling Oil increased mouth cleanliness without making their teeth overly sensitive. This distribution was significantly different from the competitive set (Chi-square = 12.04, $p = 0.03$). Examination of the pattern of results reveals that GuruNanda showed improved perceptions of mouth cleanliness without causing dental sensitivity compared to all brands except Crest. The interpretation of these data is that GuruNanda Pulling Oil is superior to 4 out of 5 competitors at improving mouth cleanliness *without* increasing tooth sensitivity. This could be used as a label claim to promote the product's ability to improve perceptions of overall mouth cleanliness without increasing dental sensitivity.

Improves perceptions of teeth whitening

Furthermore, the study found that GuruNanda Pulling Oil was ranked second for improvement in teeth whiteness amongst all six brands tested. Those who liked GuruNanda Pulling Oil reported the most improvement in teeth whiteness (45%). This suggests that the product could be marketed as an effective solution for whitening teeth.

Improves perceptions of fresh breath

Finally, the study found that 60% of those who liked GuruNanda Pulling Oil reported an improvement in freshness of breath, which could also be used as a label claim to promote the product's ability to improve perceptions of breath freshness.

Overall, the label claims that could be made for GuruNanda Pulling Oil include its effectiveness in improving mouth cleanliness, gentleness on teeth and gums, teeth whiteness, and freshness of breath.

Discussion

The findings of this study suggest that GuruNanda is likely to be endorsed by individuals who prefer natural, organic, or other homeopathic type products. The limitations of this study include a relatively small sample size, and the use of self-reported data. Future studies by EA can investigate label claim substantiation for a whitening power claim and identify a marketing approach to entice trial from consumers, as product satisfaction improves after they've used it for up to 5 days.

Based on the collected data, it can be concluded that GuruNanda Pulling Oil has strong consumer endorsement among participants who took part in the Oral Care Study. In particular, 77% of consumers who used GuruNanda Pulling Oil reported positive experiences with the product and highly rated their perception of oral hygiene metrics. Moreover, it had the highest percentage of consumers who rated it in the top two boxes for satisfaction and agreement that the product improved whiteness, freshness, and cleanliness. Therefore, a potential label claim for GuruNanda Pulling Oil could be "Improves perceptions of overall dental hygiene."

Additionally, the data shows that 58% of consumers felt that GuruNanda Pulling Oil increased mouth cleanliness without causing teeth sensitivity, indicating that the product is superior to 4 out of 5 competitors in terms of improving mouth cleanliness without increasing dental sensitivity. These findings suggest that GuruNanda Pulling Oil has the potential to be a preferred choice for consumers seeking a product that improves oral hygiene without causing discomfort.

Conclusion

The study findings suggest that GuruNanda Pulling Oil was well-liked and perceived to be effective by consumers. Natural product consumers, in particular, expressed the highest satisfaction rates for the product. Furthermore, the trial showed a promising conversion rate of 40%, indicating that two out of five participants expressed interest in continuing to use the product going forward. However, the study also revealed that some participants found the oil-pulling sensation to be strange compared to traditional mouthwashes, which were generally preferred. This presents an opportunity for education and awareness-raising efforts to motivate consumers to try and incorporate GuruNanda Pulling Oil into their oral care routine. Thus, identifying the best way to motivate trials can help GuruNanda optimize their marketing strategies and improve the adoption of their product.

Appendix A

Definition of variables

1. Year of Birth: The birth year of the respondent.
2. Gender Identity: The gender identity of the respondent.
3. On average, how often do you brush your teeth?: The average frequency with which the respondent brushes their teeth.
4. When do you brush your teeth? Please select all that apply: The times of day when the respondent brushes their teeth.
5. On average, approximately how long do you brush your teeth for?: The average duration for which the respondent brushes their teeth.
6. Do you use mouthwash or an oral rinse?: Whether or not the respondent uses mouthwash or an oral rinse.
7. Do you floss?: Whether or not the respondent flosses.
8. How often do you go to the dentist?: The frequency with which the respondent goes to the dentist.
9. Do you use any teeth whitening treatments? Examples include whitening strips, whitening toothpaste, whitening mouthwashes, or in-office whitening treatments.:
 - a. Whether or not the respondent uses any teeth whitening treatments.
10. If yes, when was the last time you used a whitening treatment?: The last time the respondent used a teeth whitening treatment.
11. Please specify the type of whitening treatment (If not applicable to you, please write N/A): The type of teeth whitening treatment the respondent uses.
12. We would like you to think about the shade / whiteness of your teeth. How effective was the mouthwash you used this week for improving your teeth whiteness?: The respondent's perceived effectiveness of the mouthwash for improving teeth whiteness.
13. We would like you to think about the freshness of your breath. How effective was the mouthwash you used this week for improving the freshness of your breath?: The respondent's perceived effectiveness of the mouthwash for improving breath freshness.
14. We would like you to think about the overall cleanliness of your mouth. How effective was the mouthwash you used this week for improving your mouth cleanliness?: The respondent's perceived effectiveness of the mouthwash for improving overall mouth cleanliness.

15. How satisfied are you with this week's mouthwash overall?: The respondent's overall satisfaction with the mouthwash used in the current week.
16. How interested are you in continuing to use this week's mouthwash as part of your oral care routine.: The respondent's interest in continuing to use the mouthwash in their oral care routine.
17. Did you experience any increases in dental sensitivity with the use of this week's mouthwash?: Whether or not the respondent experienced any increases in dental sensitivity from using the mouthwash in the current week.
18. How easy was it to swish the liquid in your mouth for up to 5 minutes?: The ease with which the respondent was able to swish the mouthwash for up to 5 minutes.
19. Please rate your agreement with the following: It was easier to use the Pulling Oil on day 5 compared to day 1.: The respondent's agreement with the statement that it was easier to use Pulling Oil on day 5 compared to day 1.
20. Please select the statement that best applies to you: Whether the time spent swishing the mouthwash impacted the respondent's satisfaction with the product use.
21. Please provide any comments or feedback for the researcher about the product you used: Any comments or feedback the respondent has about the mouthwash used.
22. How often would you be willing to replace traditional mouthwash with pulling oil (used in week 1)?: The frequency with which the respondent would be willing to replace traditional mouthwash with pulling oil.
23. Has your perception of Pulling Oil (from week 1) improved during the course of the study?: The change in perception of Pulling Oil after using the other mouthwashes

Appendix B

Participant Protocols

Oral Care Protocol for Brushing: Apply a pea-size amount of the Colgate toothpaste to the manual toothbrush provided by EA. Gently brush your teeth twice a day for two minutes each time. Set a timer to make sure you give your teeth enough attention. Please gently brush the following areas as instructed:

1. **Outer surfaces of your teeth:** gently brush the outside of your upper and then lower teeth for 15 seconds each (30 seconds total)
2. **Gumline:** tilt your brush to a 45° angle and gently move the brush back and forth using short, tooth-wide strokes on your upper and lower gum lines for 15 seconds each (30 seconds total)
3. **Inner surfaces of your teeth:** gently brush the inside of your upper and then lower teeth for 15 seconds each (30 seconds total)
4. **Chewing surfaces of your teeth:** use short back and forth strokes to brush the top surface of your back teeth of your upper and then lower teeth for 15 seconds each (30 seconds total)
5. **Tongue:** brush your tongue using quick vertical movements working from the back of your tongue to the front of your tongue to remove odor-causing bacteria (30 seconds total)

Oral Care Protocol for Mouthwash: After brushing your teeth, set a timer to make sure you're swishing for the specified amount of time. Please shake the provided mouthwash before use and then use as instructed:

1. **Shake liquid well** and pour 0.5 oz of the provided mouthwash into the provided 0.5 oz clear cup
2. Empty the cup into your mouth but **do not swallow the liquid**
3. Gently swish and pull the liquid between your teeth for the time specified below. It is critical you carefully time the duration of swishing according to which mouthwash you are using:
 - a. Mouthwash "G": 2-5 minutes (see below for time increases)
 - Mon & Tue: 2 mins
 - Wed: 3 mins
 - Thu: 4 minutes
 - Fri: 5 minutes
 - b. Mouthwash "A": 30 seconds (Mon-Fri)
 - c. Mouthwash "B": 30 seconds (Mon-Fri)
 - d. Mouthwash "C": 30 seconds (Mon-Fri)
 - e. Mouthwash "D": 30 seconds (Mon-Fri)
 - f. Mouthwash "E": 30 seconds (Mon-Fri)
4. Spit the mouthwash solution back into the clear cup & dispose of the cup
5. Rinse mouth thoroughly with water

Survey Evaluation Metrics: (1) Improvements in Whiteness, (2) Freshness of Breath, (3) Mouth Cleanliness

Survey Satisfaction Metrics: (1) Product Satisfaction, (2) Interest in Continued Use, (3) Dental Sensitivity

Appendix C
Informed Consent

Informed Consent to Participate in an Oral Care Clinical Study

Study Title: Oral Care Clinical Study

You are being invited to participate in a research study. This consent form will provide you with information on the research project, what you will need to do, and the associated risks and benefits of the research. Your participation is voluntary. Please read this form carefully. It is important that you ask questions and fully understand the research in order to make an informed decision. Please keep a copy of this document. Must be 21+ to participate.

Purpose

This research is being conducted in order to determine the effectiveness of an oral care company's performance on teeth whitening, breath freshness, and overall mouth cleanness in comparison to competitor brands.

Summary of Participant Commitment:

- Time course: Five (5) days per week for three (3) weeks
- Daily: 5-8 minute oral care routine using products provided by Ellipse Analytics ("EA")
- Weekly: *Before* and *After* photos of teeth on Day 1 & Day 5 / Complete 3-minute survey on Day 5
- Materials: Pick up pre-packaged materials from EA Office (details below)
- Compensation for study completion: Preloaded \$100 Visa gift card

Protocol Requirements:

- Participants will discontinue personal oral care routine during the 5 day protocol each week for 3 weeks.
- Participants will discontinue any whitening treatments during the 5 day protocol each week for 3 weeks.
- Participants will replace personal oral care products with oral care products provided by EA (i.e., toothbrush, tooth paste, mouthwash) during the 5 day protocol each week for 3 weeks.
- Participants will take a *Before* photo on Day 1 and an *After* photo on Day 5 of each week for 3 weeks.
- Participants will complete a 3-minute Survey on day 5 of each week for 3 weeks (3 total surveys).

Procedures:

- This study requires you to only use the toothpaste, toothbrush, and mouthwash that we provide to you. Mouthwashes will be provided to you in a non-branded container and labeled A-G. You will receive 3 of 6 total brands to evaluate.
- We will ask that you discontinue any whitening treatment for the duration of the study.
-

- Timeline: 3 week period
 - First week: Brand #1
 - Second week: Brand #2
 - Third week: Brand #3
 - Each product will be used for 5 days (Monday-Friday)
- Day-to-day procedures (consider manufacturer instructions):
 - Use the product as directed (we will provide you with specific directions for each product)
 - Toothpaste - Colgate
 - Manual tooth brushing for at least 90s
- You will be asked to complete a self-report once a week after the 5 days of each product protocol for a total of 3 self-reports. The self-reports will ask you to report on a scale of not satisfied to very satisfied on the following metrics:
 - Improvement of whiteness
 - Breath freshness
 - Overall mouth cleanness
 - Product satisfaction
 - Interest in continuing use
 - Dental sensitivity with product use
- At the beginning of the study, you will be required to pick up the research materials (toothpaste, mouthwash) at [location address] [when]

Benefits:

- The potential benefits of participating in this study may include improved dental hygiene.

Risks and Discomforts:

- Some people may experience tooth sensitivity or gum discomfort when using oral hygiene products. If you experience more than mild tooth sensitivity, stop use and consult your dentist.
- You may experience an allergic reaction if you are allergic to any of the ingredients listed in the provided toothpaste or mouthwashes.
 - An ingredient list will be provided to you for each product that you receive. If you are allergic to any of the ingredients listed, please contact the researcher to opt out of the research study.

PLEASE DO NOT SWALLOW ANY OF THE PRODUCTS.

- If an excessive amount of mouthwash is accidentally swallowed, please immediately call Poison Control at (800) 222-1222 or visit <https://www.mountsinai.org/health-library/poison/mouthwash-overdose>

By consuming each product, you assume all possible risks associated with each product as described in appendix A.

Privacy and Confidentiality

Your study related information will be kept confidential within the limits of the law. Any identifying information will be kept in a secure location and only the researchers will have access to the data. Research participants will not be identified in any publication or presentation of research results; only aggregate data will be used.

Future Research

Your de-identified information will not be used or shared with researchers outside of Ellipse Analytics.

Compensation

You will receive a \$100 preloaded Visa gift card at the completion of all 3 phases of the study.

Voluntary Participation

Taking part in this research study is entirely up to you. You may choose not to participate or you may discontinue your participation at any time. Please note that compensation is contingent on completion of all 3 study phases.

Contact Information

If you have any questions or concerns about this research, you may contact Chela Wallin at cwallin@ellipseanalytics.com.

Consent Statement and Signature

I have read this consent form and I voluntarily agree to participate in this study. I understand that I may print a copy of this consent statement for future reference.

Participant Signature

Date

Appendix D

Supplemental Table

Supplemental Table 1. Dental Sensitivity GuruNanda Pulling Oil was ranked 1st for *never* causing dental sensitivity amongst all 6 brands: Only 12% of those who used GuruNanda Pulling Oil had any increases in dental sensitivity. Experiences of increased dental sensitivity for competitor products ranged from 30%-50%, the greatest sensitivity occurred with the use of ACT (50%).

Column % Count	Listerine	ACT	Crest	Therabreath	Colgate	GuruNanda Pulling Oil	Like GuruNanda Pulling Oil
Never	56%	50%	70%	70%	64%	88% ↑	90%
	5	6	7	7	7	23	18
Rarely (less than 10% of the time) or more	44%	50%	30%	30%	36%	12% ↓	10%
	4	6	3	3	4	3	2
Total	100%	100%	100%	100%	100%	100%	100%
	9	12	10	10	11	26	20