

A Six-Month Randomized Controlled Pilot Study Evaluating the Effects of an Oral Protein
Supplement on Children's Growth Patterns

Prepared for:

TruHeight

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PURPOSE

The objective of this randomized controlled study is to assess the efficacy of consuming TruHeight Growth protein shake once a day 5 times per week for 6 months on 1) type x collagen, as assessed by the concentration in the urine, 2) height as measured by a stadiometer, 3) weight and body composition as measured by INBODY device in six months.

GENERAL INFORMATION

Study Number: CSD-SFRI-013

Test: A Six-Month Randomized Controlled Pilot Study Evaluating the Effects of an Oral Protein Supplement on Children's Growth Patterns

Test Material: TruHeight Growth Protein Shake

Investigator: John Ademola, PhD

Sub-Investigator: Clara Chan

Testing Facility: S F Research Institute
2435 Ocean Ave.
San Francisco, CA 94127

Sponsor: TruHeight
Address (4231 Balboa Ave, Ste# 539, San Diego, CA 92117)

Sponsor Representative: Justin Rapoport

Testing Start Date: January 18, 2023

Testing End Date: July 7, 2023

SUMMARY**Objectives**

This single-center pilot clinical trial was conducted for TruHeight to determine the effect of oral protein supplement (Growth Protein Shake-GPS) versus control on growth patterns in children. We hypothesize that giving GPS protein supplementation to children will improve growth patterns as assessed by concentration of collagen X concentration in the urine, height as measured by a stadiometer, as well as weight and body composition as measured by INBODY device in six months.

The oral supplement was provided in powder form. It could be mixed with water before consumption. The ingredients of the product are listed in the picture below.

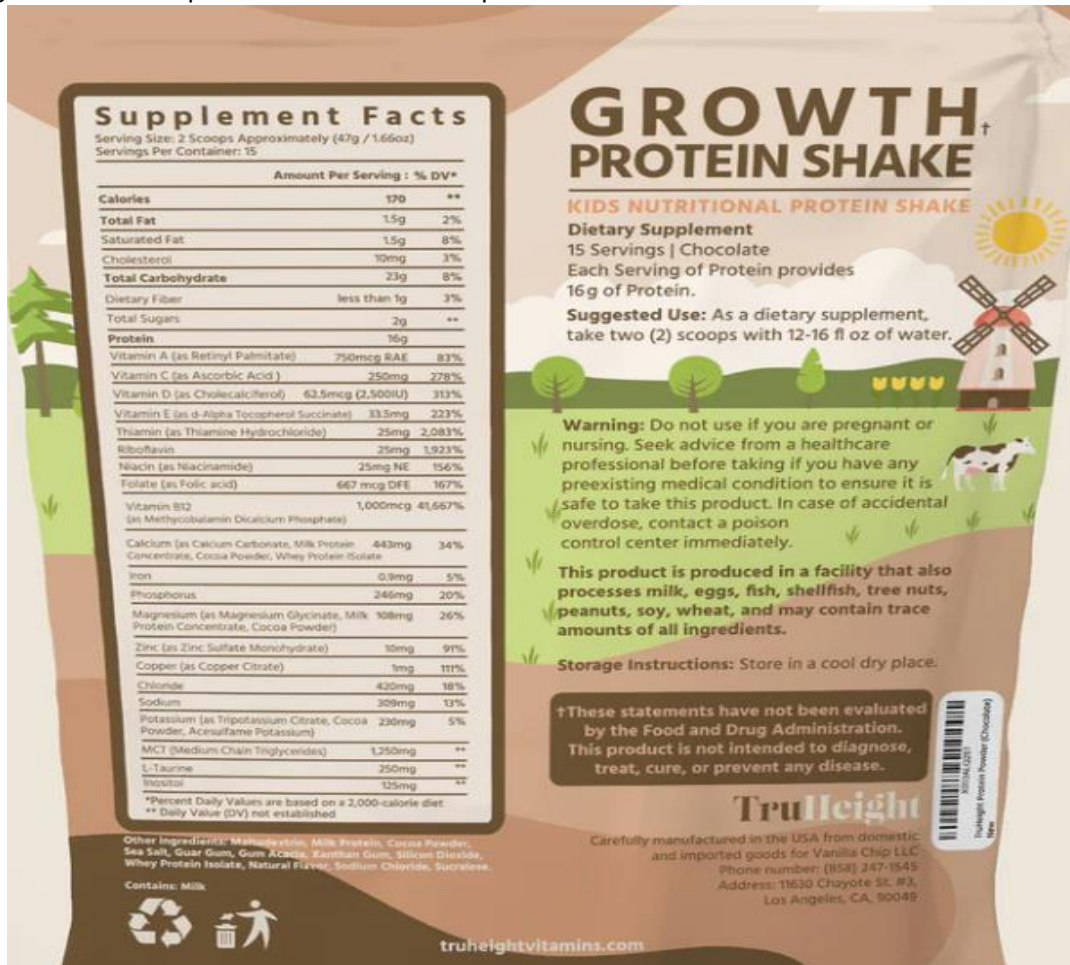


Image 1

Participants of the study were recruited from the SF RESEARCH INSTITUTE database and advertisements on social media and public places. They first reported to SF RESEARCH INSTITUTE for the baseline study visit. At this visit, subjects were screened for eligibility based on the Inclusion and Exclusion Criteria. If qualification criteria were met, eligible subjects were enrolled and assigned a subject number. This subject number was assigned in sequence as qualified subjects were enrolled in the study. A total of 32 subjects, who were 4-17 years old, were enrolled in the study with a target completion of 20 subjects. The 32 subjects were randomized to either the treatment/supplement group or control group by a computer-generated randomization code.

This study consisted of 3 study visits (SV) in a 6-month period. Height, weight, fat mass, and lean body mass were measured at baseline (SV1), 3 months ± 5 days (SV2), and 6 months ± 5 days (SV3). Urine samples were collected at SV1 and SV3. The urine samples were sent to labs for analysis of type x collagen content. A dietary or consumer perception questionnaire depending on the enrolled group (dietary for the control group; perception for the treatment group) were given to the participant or the participant's parent to fill out at baseline, SV2, and SV3. A log form was given to the participant or the participant's

parent in the treatment group to record the supplement consumption at home. All participants were required to maintain their regular diet throughout the study.

Subjects in the treatment/supplement group were given the following instructions for use:

*Mix and drink two (2) scoops of dietary supplement with 12-16 fluid oz of water.
Frequency: once a day, 5 times per week, for 6 months*

Investigator called subjects or subjects’ parents over the phone on day 45 (between SV1 and SV2) and day 120 (between SV2 and SV3) of the study to follow up on the study’s compliance.

Table 1

A schedule of procedures at each study visit appears below.

(N=20 subjects to complete)	Visit 1	Visit 2	Visit 3	After Study Conclusion
Study Activities	Baseline	Month 3	Month 6	
Informed Consent Process	X			
Verify Inclusion/Exclusion Criteria	X			
Urine Collection	X		X	Sent urine samples to lab for type x collagen measurement
Height, Weight, fat mass, lean body mass	X	X	X	
Dietary Questionnaire or Consumer Perception Questionnaire	x	x	x	

Table 1

OVERALL RESULTS

Overall results from this single-center clinical trial indicate that compared with the control group GPS, Mean increase in height, Mean change in weight, mean change in BMI, Mean change in fat body mass, mean lean change in fat body mass were significantly different from the control values at visits 2 and 3 (appendix 1). Numeric values of mean BMI, mean weight, mean fat body mass and mean lean body mass were lower in the treatment compared to control group.

Compared with the control group (4.3728), the biomarker for growth, collagen X, were significantly higher in treated group (8.1532) with a p value of 0.1606 (table 5). In the analysis of the questionnaire of

the treatment group, 86% and 100% totally agreed that their child visibly appears taller at visits 2 and 3, respectively; over 75% of the parents' reported GPS was well tolerated by the children with respect to taste, easy to consume and to digest.

STORAGE, HANDLING, AND DOCUMENTATION OF TEST MATERIALS

Investigational Products were stored under ambient conditions or as specified by the Sponsor prior to distribution to study participants. SF Research Institute did not retain the remaining products from participants.

TEST MATERIALS DESCRIPTIONS

INVESTIGATIONAL PRODUCT IDENTIFICATION

The testing product was commercially available and was distributed to participants with the same package on the market. Products (received from the Sponsor) were marked with unique study and subject numbers. Individual product samples were labeled with the assigned study number listed below and subject numbers, in accordance with the distribution.

Table 2

Sponsor Identification	SF RESEARCH INSTITUTE Identification
TruHeight Growth Protein Shake	CSD-SFRI-013 Subject ID: ____

Table 2

The Sponsor assumed responsibility for the purity, stability, characterization, and adequate preservation of the Investigational Product. The Sponsor attested to the safety of the Investigational Product for use in humans.

INFORMED CONSENT

Written informed consent and informed assent were obtained from each subject. As part of the informed consent process, the prospective subject and his/her parents were given as much time as needed to read the informed assent form (IAF) and informed consent form (ICF). They had the opportunity to have any study-related questions answered to their satisfaction prior to signing the IAF and ICF. The original signed IAF and ICF for each subject participating in the study was retained in the study file and each subject received a copy of the signed IAF and ICF.

RECORD OF SPONSOR MONITORING VISITS

The sponsor was permitted to perform site visits during the study and inspect all case report forms (CRFs) and other documentation directly associated with study.

SUBJECT DISPOSITION AND DEMOGRAPHICS

The demographic information for the pre-protocol (PP) population is presented in Table 3. A summary of subject disposition baseline information is included in Table 4.

Table 3: Demography and Baseline Height, Weight BMI Fat Body Mass, Lean Body Mass and Mean Collagen X

	Treatment group (n=17)	Control group (n=13)	P value
Gender: male	10 (58.82%)	6 (46.15%)	
Gender: female	7 (41.18%)	7 (53.85%)	
Age Mean	10.94	12.69	0.12
Age Min	4	5	
Age Max	17	17	
Age group: 4-9 years old	7 (41.18%)	3 (23.07)	
Age group: 10-17years old	10 (58.82%)	10 (76.92%)	
Ethnicity: Caucasian	0	0	
Hispanic	0	1 (7.69%)	
Asian	14 (82.35%)	11 (84.62%)	
African American	1 (5.88%)	0	
Mixed	2 (11.76%)	1 (7.69%)	
Mean Height (cm) at baseline	137.76	146.62	0.11
Mean Weight (lb) at baseline	80.51	94.38	0.28
Mean BMI at baseline	18.32	20.18	0.33
Mean Fat Body Mass % at baseline	22.72	24.81	0.58
Mean Lean Body Mass % at baseline	31.72	37.17	0.33
Mean Collagen X (ng/ml) in urine at baseline	6.13	5.59	0.74

Table 3

Table 4: Subject Disposition

All Subjects	
Enrolled subjects	32
PP population (completed subjects)	28
Discontinued subjects	4
Adverse event	Acne on face and concentrated urine (darker color of yellow)
Post to follow-up	

Table 4

ADVERSE EVENTS

An adverse event (AE) is defined as any untoward medical occurrence in a clinical investigation where a subject is administered to any product or medical device, regardless of causal relationship with the test article. Possible reactions to the test material may include subjective sensations (such as irritation), allergic reaction, upset stomach, indigestion, heartburn, or diarrhea. These reactions were not expected to be other than the mild, temporary reactions usually associated with nutritional supplement use.

Symptoms of irritation, including the examples above, were not treated as adverse reactions if they were mild in nature, even if the symptoms did not resolve over time. Symptoms that were persistent and moderate to severe in nature, or that involved elevation were considered AEs. The investigator or designee had the final authorization to determine if a reaction was considered an AE.

Three adverse events were recorded during the study. All three adverse events were considered as related to the investigation product.

PROTOCOL AMENDMENTS

Any changes or formal clarification to the procedures outlined in the protocol were documented as protocol amendments. Notes to file (for internal purposes) were used to identify study discrepancies, provide clarification, or record slight variations for items that did not require a protocol amendment.

There were no amendments to the protocol.

PROTOCOL DEVIATIONS

Any violations to the protocol that might have significantly affected the completeness, accuracy, and/or reliability of the study data or might have affected subjects' rights, safety, or well-being were documented as deviations. Notes to file (for internal clarification purposes) were used to record items that did not qualify as deviations.

No significant deviations were recorded during the course of the study. Two subjects from control group and two subjects from treatment group came in one week earlier than their scheduled site visit 2 for measurements. The reason was that subjects went out town for school spring breaks during the week of their scheduled site visit 2.

PROCEDURES AND METHODS

Prior to the start of the study, prospective subjects were screened over the telephone for eligibility criteria. Children between the ages of 4 to 17 years, who were at or below 50 percentile CDC height chart for age 2 to 20, were scheduled for eligibility screening at the clinic. Prospective subjects were advised to maintain their regular diet throughout the study.

Subjects equilibrated to ambient relative temperature and humidity for approximately 20-30 minutes prior to baseline, 3-month, and 6-month evaluation at the clinic.

At the first on-site visit, prospective subjects and their parents completed the informed assent and informed consent process. They signed the IAF and ICF.

Prospective subjects completed an eligibility and health questionnaire and were evaluated for eligibility criteria, including the following:

CDC Growth Charts: United States

Stature for age percentiles: Boys, 2 to 20 years

Males' ages between 4 to 17 years old and at or below 50 percentile CDC height charts were qualified.

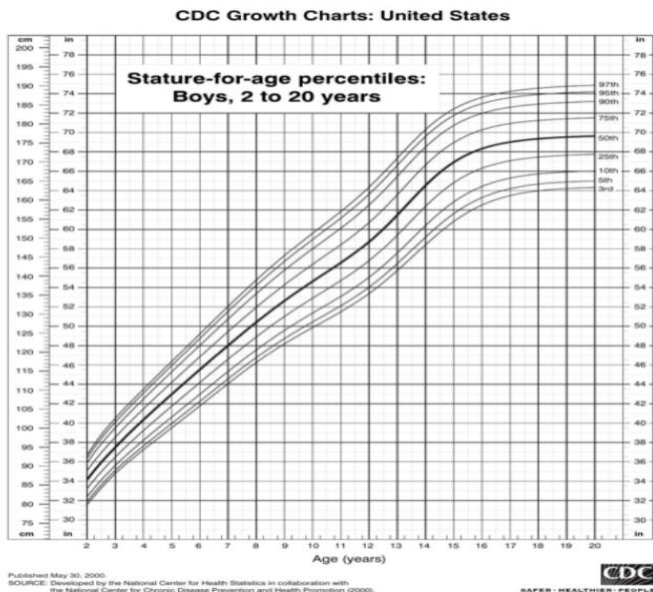


Image 2

CDC Growth Charts: United States

Stature-for-age percentiles: Girls, 2 to 20 years

Females' ages between 4 to 17 years old and at or below 50 percentile CDC height charts were qualified.

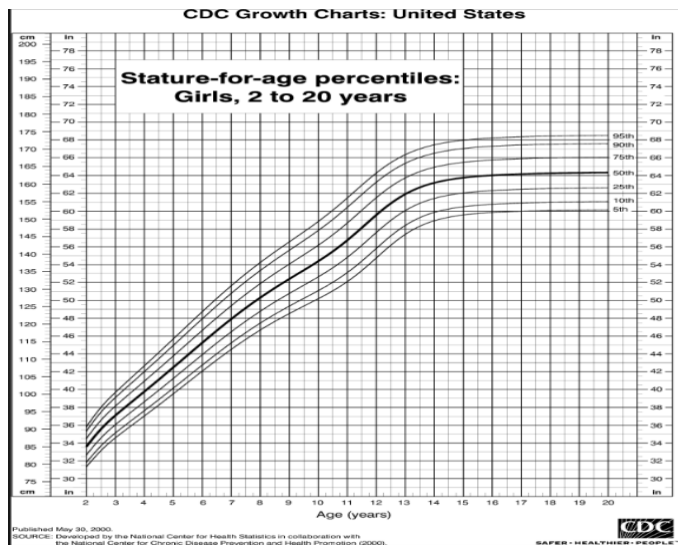


Image 3

Each candidate subject's eligibility was reviewed, and qualified subjects were enrolled in the study.

Candidate subjects who passed the eligibility screening participated in the following procedures, before and after product use:

1. Stadiometer

A stadiometer is a piece of medical equipment used for measuring human height. It is constructed out of a ruler and a sliding horizontal headpiece which is adjusted to rest on the top of the subject's head.¹

2. Inbody Device

Inbody device makes use of Bioelectrical impedance analysis (BIA). BIA is a method for measuring body composition, including muscle mass, body fat, and total body water. Alternating low and high-frequency electrical currents were sent through the water in the subject's body via contact with electrodes to measure impedance. The impedance was used to determine the subject's total body water (TBW), which could then be used to derive his/her fat-free mass—the portion of body that does not contain fat, including muscle and bone—and finally, body fat. The INBODY device could also measure body weight and calculate subject's BMI (Body Mass Index) after inputting his/her height.²

3. Type X Collagen

Type X collagen is a network-forming collagen. Type X collagen is mainly expressed in hypertrophic chondrocytes in cartilage, with expression usually limited to the hypertrophic zone of the growth plate and in the calcified zone of articular cartilage of long bones, where type X collagen seems to facilitate calcification. Type X collagen can indicate new bone formation.³

Collagen Type X ELISA is intended for the quantitative determination of Human Collagen Type X in biofluid samples, such as urine. This is a sandwich ELISA in strip well format with reagents for up to 96 tests. Type X collagen present in samples reacts with an anti-Human type X collagen capture antibody coated and dried on a microtiter plate. Latent or complex type X collagen will not bind to the capture antibody and will not be detected. After appropriate washing steps, an anti-type X collagen detection antibody conjugated to biotin binds to the captured analyte. Excess antibody is washed away and bound antibody is then reacted with avidin conjugated to horseradish peroxidase. TMB substrate is used for color development at 450nm. Color development is directly proportional to the concentration of active type X collagen in the samples. A standard calibration curve is prepared along with the samples to be measured using dilutions of Human type X collagen.⁴

- **Detection Target:** Human Collagen Type X
- **Reactivity:** Human
- **Range:** 0.312-20ng/mL
- **Sensitivity:** 0.141ng/mL
- **Storage Conditions:** Store all components at 4°C

4. Self-Assessment Questionnaire

Self-assessment of efficacy parameters was performed at 3 month and 6 month of product use for the treatment group. The efficacy parameters were assessed using the following a 5-point Hedonic scale:

5-Point Hedonic Scale:

1. Strongly Agree
2. Agree
3. Neutral (Neither agree nor disagree)
4. Disagree
5. Strongly Disagree

The height of your child visibly appears taller
TruHeight Growth Protein Shake is rich in nutrition
TruHeight Growth Protein Shake tastes good
TruHeight Growth Protein Shake is easy to prepare
TruHeight Growth Protein shake is easy to consume
TruHeight Growth Protein shake is easy to digest
My child enjoys consuming TruHeight Growth Protein Shake in a daily basis
Consuming TruHeight Growth Protein Shake daily for the past 3 or 6 months is not a burden for me or my child
I want to purchase TruHeight Growth Protein Shake for home consumption in the future
I will recommend TruHeight Growth Protein Shake to my friends and family

BIostatistics AND DATA MANAGEMENT

The PP population was the primary population for all statistical analyses testing. The PP population included all subjects who received treatment and completed the study in general accordance with the protocol.

For applicable evaluation parameters, a descriptive statistical summary is provided, including the number of observations (n), and mean at all time point.

The mean change from baseline (defined as the post-baseline value minus the baseline value) was estimated at each applicable post-baseline time point.

Percent mean change from baseline were calculated using the following formulas:

$$\text{Percent mean change from baseline} = \frac{(\text{visit mean score} - \text{baseline mean score}) \times 100}{\text{Baseline mean score}}$$

Descriptive statistics and changes from baseline statistics are presented in Table 5 and Table 6 for clinical instrumentation measurement of efficacy parameters. For applicable evaluation parameters, a description statistical summary is provided, including the number of observations (N), and percentage of panel.

Table 5: Mean Change from Baseline of Urine Collagen (ng/ml)

<i>Urine Tests Results COLLAGEN X</i>					
	Baseline	Visit 3	Change	% Change	% Subjects Improving
Mean collagen X CONTROL	5.592 ± 4.41	4.372 ± 2.65	-1.219	-12.2%	40%
Mean collagen X TREATMENT	5.665 ± 4.14	8.153 ± 9.54	+2.488	+21.8%	60%

MAINTENANCE OF RECORDS

All original records (including the study protocol, source documents, ICFs, screening/ enrollment log, and any other records or forms used in the study) and a copy of the final report will be retained on file in the SF Research Institute archives for 2 years from the final report issuance date. When the archives time has expired, the study files will either be sent to the Sponsor at the Sponsor’s expense or destroyed.

RESULT AND CONCLUSIONS

Overall Conclusions

Overall results from this single-center clinical trial indicate that the TruHeight Growth Protein Shake did perform as expected when compared to the control group, statistical differences in mean height cm compared to baseline were noted from baseline to final visit. Significant differences of the same orders of magnitude were noted for both groups in the parameters investigated, under the conditions of this test. Furthermore, subjective questionnaire administered to treatment subjects demonstrated the following, 100% agree “The Height of your child visibly appears taller” and 100% agree “ TruHeight Growth Protein Shake is rich in nutrition’.

Results:

Results: Median age was 10 (interquartile range (IQR) 17), 12 (IQR 5-17, treated and control respectively. Age group 4-9 years old (7 and 3 for treatment and control), age group 10-17 (10 and 10 for treatment and control respectively) years and Mean height, mean weight, mean BMI were 137, 80 and 18.32, respectively for treatment and 144, 26, 20, respectively for control group. Mean collagen at baseline are 6.13 and 5.59 for treatment and control respectively. Length of time on study nutrition (intervention: 6.0 months; control: 6 months; did not differ between groups. A significant difference was observed in mean height change over the 6 months of the study with those subjects randomized to the active product showing increased height growth of the course of the study compared to the control group. No significant difference in mean BMI, mean weight, fat body mass (intervention group: 18.57 (0,35%); control group: 19.03 (4.5%); $p = 0.59$), mean fat body mass (2 vs. 2; $p = 0.66$), Significant differences were observed in mean lean body mass (32.3 vs 39.1), $p = 0.29$ after visit 2; and 32.7 vs 40-1 after visit 3. Significant differences were observed in concentration of Collagen X in urine of treatment (5.66 vs 8.15) vs control (5.59 vs 4,3 at visit 3.

Discussion:

Static growth parameters: In this pilot study, we found a lack of significant improvement in the static parameters of growth (body mass, BMI). The implication of lower mean lean body mass in treatment compared with control should be discussed since higher lean body mass also ensures muscles and bones remain strong and healthy with age.

Height change over time and use was the primary endpoint of this pilot study. The active study group was shown to have a significant increase in height over the course of the study compared to control.

Collagen X as a real time marker for bone growth velocity: The observation of significantly higher concentration of Collagen X in urine of treated compared with control group may suggest that GPS could have significance in bone growth.

Implication of high concentrations of Collagen X in contrast to lack of significant differences in static parameters (weight, body mass) in treated compared with control group although measuring static parameters of growth, such as body length or height, is relatively simple. In contrast, measuring growth rate or velocity, the key parameter for evaluating and managing growth disturbances, is much more challenging because skeletal growth is a slow process, and measurement techniques lack the precision to accurately detect these small changes. Despite the concerns over the reliability of short-term stadiometer based height velocity determinations (Voss et al 1991, 1990, Van De Broek, et al, 1990,), this practice has become established for monitoring the growth of healthy children. Stadiometer-based velocity determination is much less acceptable for managing pediatric growth disturbances, especially for assessing responses to interventions, such as GPS, designed to improve growth and health. Thus, in this pilot study we explored markers that can accurately measure growth velocity on a time frame much shorter than static parameters. It is therefore reassuring that both changes in biomarkers (collagen X) and height were shown to be significantly improved after 6 months of treatment compared to control group.

Of note, Collagen X marker in the blood of growing infants and children has been shown to correlate with growth velocity in real time to accurately measure growth velocity on a time frame much shorter than static parameters. Type X collagen is normally synthesized and deposited in hypertrophic zones of active growth plates and is removed as endochondral ossification proceeds (Linsenmayer et al 1990). Therefore, it is somewhat surprising that the presence of high concentration of collagen X in urine of treated group

which reflects growth plate activity and overall rate of linear bone growth was also detected by visual and static parameters of height in the GPS group.

These observation of significantly high concentration of urine collagen X in treated group and measured height improvement in a relatively short period of study (6 months), if proven in large population, raises the exciting possibility the True Height GPS supplement may be accelerating skeletal growth in infants and children

Report approved by:

Investigator

Date

Sub-Investigator

Date

APPENDICES

(one set of table/analysis for Tx group, one set of table/analysis for control group, one table/analysis of Tx vs control at 6-month)

Appendix 1

Results for Site Visit 2 (SV2) at 3 month of Product Use

	Treatment group (n=15)	Control group (n=13)	P value
Mean Height (cm) at SV2	137.53	147.84	0.2365
Mean Increase in Height (cm) from Baseline to SV2 (mean change %)	1.4 (1.01%)	1.23 (0.8319%)	0.0668
Mean Weight (lb) at SV2	81.5	96.1	0.28733
Mean Change in Weight (lb) from Baseline to SV2 (mean change%)	2.2277 (2.73%)	4.4142 (4.59%)	0.24420
Mean BMI at SV2	18.5733	19.3076	0.59871
Mean Change in BMI from Baseline to SV2 (mean change %)	0.06667 (0.35%)	0.876923 (4.54%)	0.23135
Mean Fat Body Mass % at SV2	21.5733	22.9462	0.66927
Mean Change in Fat Body Mass% from Baseline to SV2 (mean change %)	2.0133 (9.42%)	1.86154 (8.11%)	0.12247
Mean Lean Body Mass % at SV2	32.8333	39.1462	0.29435
Mean Change in Lean Body Mass % from Baseline to SV2 (mean change %)	1.8867 (5.74%)	1.9769 (5.05%)	0.07983

	Treatment group (n=15)	Control group (n=13)	P value
Mean Height (cm) at SV3	139.44	148.84	0.184023
Mean Increase in Height (cm) from Baseline to SV3 (mean change %)	3.31042 (2.37%)	2.23077 (1.49%)	0.01438
Mean Weight (lb) at SV3	84.066	97.3153	0.345396
Mean Change in Weight (lb) from Baseline to SV3 (mean change%)	0.33889 (0.40%)	5.62967 (5.78%)	0.185143
Mean BMI at SV3	18.96	19.2846	0.824283
Mean Change in BMI from Baseline to SV3 (mean change %)	0.45333 (2.39%)	0.9 (4.66%)	0.45692
Mean Fat Body Mass % at SV3	24.8457	21.7077	0.41548

Mean Change in Fat Body Mass% from Baseline to SV3 (mean change %)	1.26 (5.07%)	3.1 (14.28%)	0.37626
Mean Lean Body Mass % at SV3	32.7267	40.0077	0.23994
Mean Change in Lean Body Mass % from Baseline to SV3 (mean change %)	1.78 (5.43%)	2.8385 (7.09%)	0.13424

Table 14: Self-Assessment Performance Parameters

Questionnaire SV2						
	Strongly Disagree	Disagree	Agree	Strongly Agree		
The Height of your child visibly appears taller	0 (0%)	2 (13.33%)	13 (86.66%)	0 (0%)		
TruHeight Growth Protein Shake is rich in nutrition	0 (0%)	0 (0%)	13 (86.66%)	2 (13.33%)		
TruHeight Growth Protein Shake tastes good	0 (0%)	3 (20%)	9 (60%)	3 (20%)		
TruHeight Growth Protein Shake is easy to prepare	0 (0%)	2 (13.33%)	7 (46.66%)	6 (40%)		
TruHeight Growth Protein shake is easy to consume	0 (0%)	2 (13.33%)	9 (60%)	4 (26.66%)		
TruHeight Growth Protein shake is easy to digest	0 (0%)	0 (0%)	11 (73.33%)	4 (26.66%)		
My child enjoys consuming	0 (0%)	5(33.33%)	7 (46.66%)	3 (20%)		

TruHeight Growth Protein Shake on a daily basis						
Consuming TruHeight Growth Protein Shake daily for the past 3 months is not a burden for me or my child	0 (0%)	8 (53.33%)	5 (33.33%)	2 (13.33%)		
	Breakfast	Morning snack	Lunch	Afternoon Snack	Dinner	Afternoon dinner
When does your child usually consume the protein shake in a day	3 (20%)	3 (20%)	0 (0%)	2 (13.33%)	1 (6.66%)	6 (40%)
	Yes	No				
Have you changed your dietary pattern in the past 3 months	0 (0%)	15 (100%)				
	Strongly disagree	Disagree	Agree	Strongly agree		
I want to purchase TruHeight Growth Protein Shake	0 (0%)	4 (26.66%)	10 (66.66%)	1 (6.66%)		
I will recommend TruHeight Growth Protein Shake to my friends and family	0 (0%)	1 (6.66%)	11 (73.33%)	3 (20%)		

Questionnaire SV3						
	Strongly Disagree	Disagree	Agree	Strongly Agree		
The Height of your child visibly appears taller	0 (0%)	0 (0%)	15 (100%)	0 (0%)	T=15 treatment	
TruHeight Growth Protein Shake is rich in nutrition	0 (0%)	0 (0%)	14 (93.33%)	1 (6.66%)	T=15	
TruHeight Growth Protein Shake tastes good	0 (0%)	4 (26.66%)	8 (53.33%)	3 (20%)	T=15	
TruHeight Growth Protein Shake is easy to prepare	0 (0%)	2 (13.33%)	11 (73.33%)	2 (13.33%)	T=15	
TruHeight Growth Protein shake is easy to consume	0 (0%)	3 (20%)	10 (66.66%)	2 (13.33%)	T=15	
TruHeight Growth Protein shake is easy to digest	0 (0%)	2 (13.33%)	9 (60%)	4 (26.66%)	T=15	
My child enjoys consuming TruHeight Growth Protein Shake on a daily basis	0 (0%)	6 (40%)	6 (40%)	3 (20%)	T=15	
Consuming TruHeight Growth Protein Shake daily for the	2 (13.33%)	5 (33.33%)	7 (46.66%)	1 (6.66%)	T=15	

past 3 months is not a burden for me or my child						
	Breakfast	Morning snack	Lunch	Afternoon Snack	Dinner	Afternoon dinner
When does your child usually consume the protein shake in a day	2 (13.33%)	2 (13.33%)	0 (0%)	4 (26.66%)	2 (13.33%)	5 (33.33%)
	Yes	No				
Have you changed your dietary pattern in the past 3 months	2 (13.33%)	13 (86.66%)			T=15	
	Strongly disagree	Disagree	Agree	Strongly agree		
I want to purchase TruHeight Growth Protein Shake	0 (0%)	6 (40%)	9 (60%)	0 (0%)	T=15	
I will recommend TruHeight Growth Protein Shake to my friends and family	0 (0%)	3 (20%)	8 (53.33%)	4 (26.66%)	T=15	

Table 15: Collagen X in urine analysis

	Mean Control	Mean Treatment	p-value
Site Visit 1 (Baseline)	5.592	5.665	0.9656
Site Visit 3	4.3728	8.1532	0.1606
	Mean change in Control	Mean change in Treatment	Change p-value
	1.219	2.488	0.8051

II. Raw Data

3 month: Height of your child visibly appears taller					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
Did not show to SV3	7				
2	6			1	
3	4			1	
4	12				
5	17				
6	17				1
7	7			1	
8	17			1	
9	13			1	
10	17				1
11	8			1	
12	9			1	
13	5			1	
14	14			1	
15	9			1	
16	16			1	
17	14			1	
18	5				
19	10			1	
20	8				
21	12				
22	16				
23	14				
24	14			1	
25	17				
26	15				
27	10				
28	9				
29	15				
30	11			1	
31	15				
32	12				1

3 month: TruHeight Growth Protein Shake is rich in nutrition					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
Did not show to SV3	7				
2	6			1	
3	4			1	
4	12				
5	17				
6	17			1	
7	7			1	
8	17		1		
9	13		1		
10	17		1		
11	8			1	
12	9			1	
13	5			1	
14	14			1	
15	9			1	
16	16			1	
17	14			1	
18	5				
19	10			1	
20	8				
21	12				
22	16				
23	14				
24	14			1	
25	17				
26	15				
27	10				
28	9				
29	15				
30	11			1	
31	15				
32	12				1

3 month: TruHeight Growth Protein Shake tastes good					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
Did not show to SV3	7				
	2 6		1		
	3 4		1		
	4 12				
	5 17				
	6 17			1	
	7 7			1	
	8 17			1	
	9 13				1
	10 17			1	
	11 8			1	
	12 9		1		
	13 5			1	
	14 14			1	
	15 9				1
	16 16			1	
	17 14				1
	18 5				
	19 10			1	
	20 8				
	21 12				
	22 16				
	23 14				
	24 14			1	
	25 17				
	26 15				
	27 10				
	28 9				
	29 15				
	30 11			1	
	31 15				
	32 12				1

3 month: TruHeight Growth Protein Shake is easy to prepare					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
Did not show to SV3	7				
	2 6			1	
	3 4			1	
	4 12				
	5 17				
	6 17			1	
	7 7		1		
	8 17		1		
	9 13		1		
	10 17		1		
	11 8			1	
	12 9		1		
	13 5		1		
	14 14				1
	15 9				1
	16 16			1	
	17 14			1	
	18 5				
	19 10		1		
	20 8				
	21 12				
	22 16				
	23 14				
	24 14			1	
	25 17				
	26 15				
	27 10				
	28 9				
	29 15				
	30 11			1	
	31 15				
	32 12				1

3 month: TruHeight Growth Protein shake is easy to consume					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
Did not show to SV3	7				
	2	6		1	
	3	4		1	
	4	12			
	5	17			
	6	17		1	
	7	7		1	
	8	17	1		
	9	13	1		
	10	17	1		
	11	8		1	
	12	9	1		
	13	5		1	
	14	14		1	
	15	9			1
	16	16		1	
	17	14	1		
	18	5			
	19	10		1	
	20	8			
	21	12			
	22	16			
	23	14			
	24	14	1		
	25	17			
	26	15			
	27	10			
	28	9			
	29	15			
	30	11			1
	31	15			
	32	12		1	

3 month: TruHeight Growth Protein is easy to digest					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
Did not show to SV3	7				
	2	6	1		
	3	4		1	
	4	12			
	5	17			
	6	17	1		
	7	7		1	
	8	17		1	
	9	13	1		
	10	17	1		
	11	8		1	
	12	9		1	
	13	5		1	
	14	14		1	
	15	9		1	
	16	16		1	
	17	14		1	
	18	5			
	19	10		1	
	20	8			
	21	12			
	22	16			
	23	14			
	24	14	1		
	25	17			
	26	15			
	27	10			
	28	9			
	29	15			
	30	11		1	
	31	15			
	32	12		1	

3 month: My child enjoys consuming TruHeight Growth Protein shake on a daily basis					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
Did not show to SV3	7				
	2		1		
	3		1		
	4				
	5				
	6			1	
	7			1	
	8			1	
	9			1	
	10			1	
	11			1	
	12	1			
	13				1
	14				1
	15				1
	16			1	
	17				1
	18				
	19			1	
	20				
	21				
	22				
	23				
	24			1	
	25				
	26				
	27				
	28				
	29				
	30				1
	31				
	32				1

3 month: Consuming TruHeight Growth Protein Shake daily for the past 3 months is not a burden for me or Age					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
Did not show to SV3	7				
	2		1		
	3		1		
	4				
	5				
	6			1	
	7				1
	8				1
	9				1
	10			1	
	11			1	
	12			1	
	13				1
	14				1
	15				1
	16				1
	17			1	
	18				
	19				1
	20				
	21				
	22				
	23				
	24			1	
	25				
	26				
	27				
	28				
	29				
	30				1
	31				
	32				1

3 month: When does your child usually consume the protein shake in a day						
Subject #	Age	breakfast	morning snack	lunch	afternoon snack dinner	after dinner
Did not show to SV3						
	2	7		1		
	3	4		1		
	4	12				
	5	17				
	6	17			1	
	7	7				1
	8	17			1	
	9	13	1			
	10	17		1		
	11	8	1			
	12	9				1
	13	5				1
	14	14				1
	15	9	1			
	16	16			1	
	17	14				1
	18	5				
	19	10				1
	20	8				
	21	12				
	22	16				
	23	14				
	24	14				1
	25	17				
	26	15				
	27	10				
	28	9				
	29	15				
	30	11				1
	31	15				
	32	12	1			

3 month: Have you changed your dietary pattern in the past 3 months			
Subject #	Age	yes	no
Did not show to SV3			
	2	7	
	2	6	1
	3	4	1
	4	12	
	5	17	
	6	17	1
	7	7	1
	8	17	1
	9	13	1
	10	17	1
	11	8	1
	12	9	1
	13	5	1
	14	14	1
	15	9	1
	16	16	1
	17	14	1
	18	5	
	19	10	1
	20	8	
	21	12	
	22	16	
	23	14	
	24	14	1
	25	17	
	26	15	
	27	10	
	28	9	
	29	15	
	30	11	1
	31	15	
	32	12	1

3 month: I want to purchase TruHeight Growth Protein Shake for home consumption in the future					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
Did not show to SV3					
2	6			1	
3	4			1	
4	12				
5	17				
6	17			1	
7	7			1	
8	17			1	
9	13	1			
10	17			1	
11	8			1	
12	9			1	
13	5				1
14	14				1
15	9				1
16	16			1	
17	14			1	
18	5				
19	10				1
20	8				
21	12				
22	16				
23	14				
24	14			1	
25	17				
26	15				
27	10				
28	9				
29	15				
30	11			1	
31	15				
32	12				1

3 month: I will recommend TruHeight Growth Protein Shake to my friends and family					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
Did not show to SV3					
2	6		1		
3	4			1	
4	12				
5	17				
6	17			1	
7	7			1	
8	17			1	
9	13	1			
10	17	1			
11	8			1	
12	9			1	
13	5			1	
14	14				1
15	9			1	
16	16			1	
17	14			1	
18	5				
19	10			1	
20	8				
21	12				
22	16				
23	14				
24	14			1	
25	17				
26	15				
27	10				
28	9				
29	15				
30	11			1	
31	15				
32	12				1

6 month: Height of your child visibly appears taller					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
1	7				
2	6				1
3	4			1	
4	12				
5	17				
6	17			1	
7	7			1	
8	17				
9	13			1	
10	17			1	
11	8			1	
12	9			1	
13	5			1	
14	14			1	
15	9			1	
16	16			1	
17	14			1	
18	5				
19	10			1	
20	8				
21	12				
22	16				
23	14				
24	14				
25	17				
26	15				
27	10				
28	9				
29	15				
30	11			1	
31	15				
32	12				

6 month: TruHeight Growth Protein Shake is rich in nutrition					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
1	7				
2	6				1
3	4				1
4	12				
5	17				
6	17				1
7	7				1
8	17				
9	13		1		
10	17				1
11	8				1
12	9				1
13	5				1
14	14				1
15	9				1
16	16				1
17	14				1
18	5				
19	10				1
20	8				
21	12				
22	16				
23	14				
24	14				
25	17				
26	15				
27	10				
28	9				
29	15				
30	11				1
31	15				
32	12				

6 month: TruHeight Growth Protein Shake tastes good					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
1	7				
2	6		1		
3	4		1		
4	12				
5	17				
6	17				1
7	7			1	
8	17				
9	13		1		
10	17			1	
11	8		1		
12	9			1	
13	5			1	
14	14				1
15	9				1
16	16			1	
17	14				1
18	5				
19	10				
20	8			1	
21	12				
22	16				
23	14				
24	14				
25	17				
26	15				
27	10				
28	9				
29	15				
30	11			1	
31	15				
32	12				

6 month: TruHeight Growth Protein Shake is easy to prepare					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
1	7				
2	6		1		
3	4		1		
4	12				
5	17				
6	17		1		
7	7		1		
8	17				
9	13	1			
10	17	1			
11	8		1		
12	9		1		
13	5		1		
14	14			1	
15	9		1		
16	16		1		
17	14			1	
18	5				
19	10		1		
20	8				
21	12				
22	16				
23	14				
24	14				
25	17				
26	15				
27	10				
28	9				
29	15				
30	11			1	
31	15				
32	12				

6 month: TruHeight Growth Protein shake is easy to consume					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
1	7				
2	6		1		
3	4		1		
4	12				
5	17				
6	17		1		
7	7		1		
8	17				
9	13	1			
10	17	1			
11	8		1		
12	9		1		
13	5		1		
14	14			1	
15	9		1		
16	16		1		
17	14			1	
18	5				
19	10		1		
20	8				
21	12				
22	16				
23	14				
24	14				
25	17				
26	15				
27	10				
28	9				
29	15				
30	11			1	
31	15				
32	12				

6 month: TruHeight Growth Protein is easy to digest

Subject #	Age	strongly agree	agree	disagree	strongly disagree
1	7				
2	6		1		
3	4		1		
4	12				
5	17				
6	17		1		
7	7			1	
8	17				
9	13			1	
10	17		1		
11	8			1	
12	9			1	
13	5			1	
14	14				1
15	9			1	
16	16			1	
17	14				1
18	5				
19	10			1	
20	8				
21	12				
22	16				
23	14				
24	14				
25	17				
26	15				
27	10				
28	9				
29	15				
30	11			1	
31	15				
32	12				

6 month: My child enjoys consuming TruHeight Growth Protein shake on a daily basis

Subject #	Age	strongly agree	agree	disagree	strongly disagree
1	7				
2	6		1		
3	4		1		
4	12				
5	17				
6	17			1	
7	7				1
8	17				
9	13			1	
10	17			1	
11	8			1	
12	9			1	
13	5				1
14	14		1		
15	9				1
16	16			1	
17	14				1
18	5				
19	10				1
20	8				
21	12				
22	16				
23	14				
24	14				
25	17				
26	15				
27	10				
28	9				
29	15				
30	11				1
31	15				
32	12				

6 month: Consuming TruHeight Growth Protein Shake daily for the past 3 months is not a burden for me or my child		Age	strongly agree	agree	disagree	strongly disagree
1		7				
2		6				1
3		4				1
4		12				
5		17				
6		17		1		
7		7		1		
8		17				
9		13	1			
10		17		1		
11		8		1		
12		9		1		
13		5			1	
14		14			1	
15		9			1	
16		16		1		
17		14			1	
18		5				
19		10		1		
20		8				
21		12				
22		16				
23		14				
24		14				
25		17				
26		15				
27		10				
28		9				
29		15				
30		11			1	
31		15				
32		12				

6 month: When does your child usually consume the protein shake in a day		Age	breakfast	morning	lunch	afternoon snai	dinner	after dinner
1		7						
2		6		1				
3		4		1				
4		12						
5		17						
6		17				1		
7		7						1
8		17						
9		13	1					
10		17	1					
11		8						1
12		9				1		
13		5					1	
14		14						1
15		9				1		
16		16				1		
17		14						1
18		5						
19		10						1
20		8						
21		12						
22		16						
23		14						
24		14						
25		17						
26		15						
27		10						
28		9						
29		15						
30		11					1	
31		15						
32		12						

6 month: Have you changed your dietary pattern in the past 3 months		Age	yes	no
1		7		
2		6		1
3		4		1
4		12		
5		17		
6		17		1
7		7		1
8		17		
9		13	1	
10		17		1
11		8		1
12		9	1	
13		5		1
14		14		1
15		9		1
16		16		1
17		14		1
18		5		
19		10		1
20		8		
21		12		
22		16		
23		14		
24		14		
25		17		
26		15		
27		10		
28		9		
29		15		
30		11		1
31		15		
32		12		

6 month: I want to purchase TruHeight Growth Protein Shake for home consumption in the future					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
1	7				
2	6			1	
3	4		1		
4	12				
5	17				
6	17				1
7	7			1	
8	17				
9	13		1		
10	17		1		
11	8		1		
12	9		1		
13	5				1
14	14			1	
15	9		1		
16	16		1		
17	14				1
18	5				
19	10			1	
20	8				
21	12				
22	16				
23	14				
24	14				
25	17				
26	15				
27	10				
28	9				
29	15				
30	11				1
31	15				
32	12				

6 month: I will recommend TruHeight Growth Protein Shake to my friends and family					
Subject #	Age	strongly agree	agree	disagree	strongly disagree
1	7				
2	6		1		
3	4		1		
4	12				
5	17				
6	17				1
7	7			1	
8	17				
9	13		1		
10	17			1	
11	8			1	
12	9		1		
13	5			1	
14	14			1	
15	9			1	
16	16			1	
17	14				1
18	5				
19	10			1	
20	8				
21	12				
22	16				
23	14				
24	14				
25	17				
26	15				
27	10				
28	9				
29	15				
30	11				1
31	15				
32	12				

Subject	Treatment	Height cm SV1	Height cm SV2	Height cm SV3	Subject	Treatment	Height feet SV1	Height feet SV2	Height feet SV3
1	control	104	126.5	no show	1	control	3'5	4'1.75	no show
4	control	152	155	155	4	control	5	5'1	5'1
5	control	160	161	161	5	control	5'3	5'3.5	5'3
18	control	115	116	119	18	control	3'9.5	3'9.75	3'11
20	control	119	122.5	123	20	control	3'11	4'0.25	4'1
21	control	144	144	145.5	21	control	4'8.5	4'8.75	4'9.5
22	control	152	152	152	22	control	5'0	4'11.75	5'0
23	control	148	150	151	23	control	4'8.5	4'11	4'11.5
25	control	167	168.5	168.5	25	control	5'5	5'6.25	5'6.25
26	control	156	156.5	157	26	control	5'1.5	5'1.5	5'1.25
27	control	142	144.5	147	27	control	4'8	4'9	4'10
28	control	126	126.5	128	28	control	4'1.5	4'1.75	4'2.5
29	control	164	164	165	29	control	5'4.5	5'4.5	5'5
31	control	161	161.5	163	31	control	5'3.5	5'3.5	5'4
2	powder	115	117	118	2	powder	3'9	3'10	3'11
3	powder	107	108.5	111	3	powder	3'6	3'6.75	3'5
6	powder	159	160	160	6	powder	5'2.5	5'3	5'3
7	powder	118	118.5	120.5	7	powder	3'10.5	3'10.75	3'11.5
30	powder	133	135	137	8	powder	5'1.5	5'0.25	no show
9	powder	141	142.5	145	9	powder	4'7.5	4'8	4'9
10	powder	170	170.5	172	10	powder	5'7	5'7.1	5'8
11	powder	117	119.5	120	11	powder	3'9	3'11	3'11
12	powder	131	132.5	133	12	powder	4'3	4'4.25	4'4.5
13	powder	100	101.5	103.5	13	powder	3'3	3'3	3'0
14	powder	159	159	160	14	powder	5'2.5	5'2.5	5'3
15	powder	128	130	132	15	powder	4'2.5	4'3.25	4'4
16	powder	166	166.5	167	16	powder	5'5.5	5'5.5	5'5.5
17	powder	154	158	159.1	17	powder	5'0.5	5'2.5	5'2.5
19	powder	144	144	148	19	powder	4'8.5	4'8.75	4'10
24	powder	161	163.5	no show	24	powder	5'3	5'4.25	no show
8	powder	156	153	no show	30	powder	4'4.5	4'5.25	4'6
32	powder	139	141	no show	32	powder	4'6.5	4'7.5	no show

Subject	Treatment	Body fat % SV1	Body fat % SV2	Body fat % SV3	Subject	Treatment	Muscle % SV1	Muscle % SV2	Muscle % SV3
1	control	21	17.9	no show	1	control	21.8	23.8	no show
4	control	25.9	24.1	27.4	4	control	42.3	45.4	44.5
5	control	28.2	28.3	28.3	5	control	48.9	52	50.3
18	control	20.3	20.9	14.5	18	control	15.9	15.4	17.4
20	control	22	18.2	12	20	control	20.3	21.2	23.1
21	control	56.6	43.6	43.8	21	control	24.3	33.1	34.6
22	control	23.8	23.6	23	22	control	39.9	41.7	41.7
23	control	31.3	32	32.5	23	control	34.6	36.6	36.6
25	control	25.2	21.2	21	25	control	60.6	65.7	65
26	control	27.5	29.1	25.8	26	control	50	47.6	50.9
27	control	16.8	13.5	12.3	27	control	30.9	34	35.1
28	control	22.8	19.5	19.8	28	control	18.7	20.7	21.4
29	control	12	11.8	10.1	29	control	48.5	45.9	48.1
31	control	10.1	12.5	11.7	31	control	48.3	49.6	51.4
2	powder	29.2	25.5	28	2	powder	19.8	22	22.5
3	powder	20	21.2	22.9	3	powder	14.3	15	13.7
6	powder	35	31.9	36.6	6	powder	45.6	50.7	49.2
7	powder	19.8	18	19.2	7	powder	19	20.1	20.5
30	powder	18	17.7	16.9	30	powder	26.7	28.4	29.1
9	powder	34.2	26.9	27.7	9	powder	35.9	38.4	41.7
10	powder	31.8	27.1	27.1	10	powder	67.2	69.7	73.4
11	powder	20.9	14.3	17.7	11	powder	15	17.4	17.2
12	powder	24.2	27	21.5	12	powder	21.4	21.4	24.5
13	powder	24.9	20.5	39.6	13	powder	11.9	13.4	9.3
14	powder	34.3	37.3	35	14	powder	43.2	43.7	44.5
15	powder	17.5	16.6	16.9	15	powder	21.2	22.7	23.4
16	powder	9.5	7.9	9.4	16	powder	54	56.9	56
17	powder	15.5	11.8	11.5	17	powder	40.6	44.3	46.5
19	powder	19	19.9	42.7	19	powder	28.4	28.4	19.4
24	powder	15.6	13.4	no show	24	powder	48.3	53.4	no show
8	powder	31.6	32.7	no show	8	powder	52.5	52.5	no show
32	powder	16.9	12.3	no show	32	powder	26.7	29.8	no show

Subject	Treatment	Weight lb SV1	Weight lb SV2	Weight lb SV3	Subject	Treatment	BMI SV1	BMI SV2	BMI SV3
1	control	55.8	57.5	no show	1	control	23	16.2	no show
4	control	106.9	111.3	114.2	4	control	20.9	21.1	21.6
5	control	124.8	126.5	127.7	5	control	22.1	22.1	22.6
18	control	43.7	43	43.7	18	control	14.8	14.3	13.9
20	control	53.4	52.7	52.5	20	control	17	16.1	15.4
21	control	110.9	113.3	117.3	21	control	35.3	24.6	25
22	control	98	101.9	100.8	22	control	19.5	19.9	19.7
23	control	97.2	102.3	103.8	23	control	20	20.7	20.6
25	control	144	147.3	145.1	25	control	24	23.8	23.1
26	control	126.8	123.2	125.4	26	control	23.6	22.9	23.3
27	control	71.7	74.7	75.6	27	control	16.1	16.2	15.8
28	control	51.1	53.4	54.7	28	control	14.7	15	15.1
29	control	101	95.9	98.3	29	control	17.2	16.2	16.4
31	control	98.3	103.8	106	31	control	17.2	18.1	18.2
2	powder	57.3	57.3	62.6	2	powder	19.9	19.9	19.9
3	powder	39.3	41.7	39.5	3	powder	15.9	15.9	16.5
6	powder	130	136.2	142.4	6	powder	23.5	24.1	25.2
7	powder	49.7	50.7	52.7	7	powder	16.2	16.1	16.4
30	powder	63.5	67.2	67.9	30	powder	16.2	16.9	16.4
9	powder	103	98.1	107.1	9	powder	23.5	22	23.2
10	powder	173.7	167.3	176.4	10	powder	27.2	26.2	26.8
11	powder	42.3	43.7	44.8	11	powder	14.7	13.9	14.3
12	powder	59	60.8	63.3	12	powder	15.8	17.1	16.2
13	powder	36.8	38.1	38.1	13	powder	17.1	16.8	20.7
14	powder	123.5	130.7	127.9	14	powder	22.2	23.9	22.7
15	powder	53.4	56.4	57.8	15	powder	14.7	15.3	15
16	powder	107.5	110.9	111.6	16	powder	17.9	18.2	18.3
17	powder	90.4	93.3	97.2	17	powder	17.4	17.1	17.8
19	powder	69.7	70.1	71.7	19	powder	15.4	15.2	15
24	powder	105.6	112.7	no show	24	powder	18.7	19.4	no show
8	powder	138.5	142.2	no show	8	powder	26.2	27.8	no show
32	powder	63.9	65.9	no show	32	powder	15.2	15.1	no show

Sample ID	Treatment	Urine Conc (ng/ml) SV1	Subject	Treatment	Urine Conc (ng/ml) SV3
1	control	7.317	1	control	no show
4	control	1.351	4	control	9.44
5	control	2.229	5	control	4.123
18	control	0.476	18	control	4.5
20	control	1.718	20	control	1.791
21	control	13.688	21	control	4.269
22	control	10.018	22	control	8.324
23	control	13.233	23	control	1.33
25	control	2.163	25	control	2.892
26	control	8.626	26	control	1.839
27	control	3.690	27	control	4.096
28	control	2.370	28	control	4.578
29	control	6.887	29	control	1.818
31	control	6.250	31	control	7.847
2	powder	3.377	2	powder	4.453
3	powder	2.963	3	powder	6.711
6	powder	8.212	6	powder	23.998
7	powder	6.752	7	powder	1.042
30	powder	9.676	30	powder	19.451
9	powder	13.427	9	powder	5.369
10	powder	13.277	10	powder	1.64
11	powder	6.732	11	powder	26.345
12	powder	0.485	12	powder	1.875
13	powder	4.134	13	powder	2.116
14	powder	0.556	14	powder	0.88
15	powder	0.926	15	powder	0.885
16	powder	7.673	16	powder	1.87
17	powder	2.542	17	powder	3.211
19	powder	4.240	19	powder	22.452
24	powder	11.159	24	powder	no show
8	powder	9.418	8	powder	no show
32	powder	8.067	32	powder	no show

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