IJSRM
INTERNATIONAL JOURNAL OF SCIENCE AND RESEARCH METHODOLOGY
An Official Publication of Human Journals

Human Journals
Research Article
January 2023 Vol.:23, Issue:3

A Randomized, Double Blind, Placebo-Controlled Study to Evaluate The Safety and Efficacy of iPulse in Overweight Adult Healthy Volunteers

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Submitted: 23 December 2022
Accepted: 29 December 2022
Published: 30 January 2023

Keywords: iPulse, obesity, overweight, Vitis vinifera

ABSTRACT

Obesity and metabolic syndrome are considered to be major public health crises not only in the United States but also globally. Grape Seed Extract (GSE), a *Vitis vinifera* supplement taken with a Restricted Calorie Diet (RCD), has favorable effects in reducing anthropometric measurements and inflammatory markers in obese or overweight individuals, and may play an effective role in the treatment of obesity. The study goal was to assess the safety and efficacy of iPulse for weight management in adult male and/or female obese or overweight subjects. The study included 80 healthy adult male and female subjects who were instructed to take iPulse twice daily by skipping the lunch. The investigational product, either active or placebo, was given for a period of 3 months (90 days). All were randomized into active and placebo groups (1:1 ratio). These vital sign parameters were found to be normal for all the study subjects and did not have any clinically or statistically significant abnormal values when compared between and within groups, implying that the test product has no safety issues observed after 90 days of oral administration. The measured laboratory parameters were found to be completely normal before and after the treatment periods across all the study groups. There were no protocol deviations observed during the course of the trial. All completed study subjects have 100% compliance with the investigational product. In this study, iPulse has demonstrated an excellent safety profile when administered orally. Subjects who were in the mild to moderate range of overweight and received iPulse showed significant improvement in their fasting blood glucose levels; Leptin, Apolipoproteins A1 & B, Adiponectin, CoQ10 were better than the placebo group arm at the end of the study (Day 90). This study clearly indicates that iPulse has significant anti-inflammatory effect in the study subjects as well. Therefore, it is concluded that iPulse has a definite role in improving the overweight condition along with improving the quality of life in over weight subjects when administered the product orally for 90 consecutive days.

BACKGROUND

Obesity and metabolic syndrome are considered to be major public health crises not only in the United States but also globally. An expert panel convened by the National Institutes of Health has defined overweight as a body mass index (BMI) of 25 to 29.9 kg/m2 and obesity as a BMI of 30 kg/m2 or greater. According to the World Health Organization (WHO), as of 2005 there were approximately 1.6 billion overweight adults globally, of whom at least 300 million were clinically obese. The prevalence of overweight and obese American adults has steadily increased over the years in both genders, at all ages, in all racial and ethnic groups, at all educational levels, and for all smoking levels. Most studies show an increase in mortality rates associated with obesity. Individuals who are obese have a 10%–50% increased risk of death from all causes, compared with healthy-weight individuals. Most of the increased risk is due to cardiovascular causes. Obesity is associated with about 112,000 excess deaths per year in the U.S. population relative to healthy-weight individuals.

STUDY OBJECTIVES

1. The primary objective was to evaluate the safety of iPulse from baseline to end of the trial in male or female subjects.

2. The secondary objective was to evaluate the efficacy and tolerability of iPulse from baseline to end of the trial in male or female subjects.

STUDY DESIGN

Design: A randomized, double-blind, parallel assignment, placebo-controlled, two arm study.

Study Treatment Allocation: All 80 subjects (healthy adult male and female subjects) were randomized into active and placebo groups (1:1 ratio) and given the following treatment:

Group I-iS

Group II-Pb

Number of Subjects: 80 subjects (40+40) healthy adult male and female subjects.

Randomization (assignment to treatment sequence): Investigational products duly labelled with randomization codes were provided to the investigators by the sponsor through Radiant Research. As per the randomization schedule the investigator / designee dispensed IP bottles, two for each subject/day. The juice or IP bottles were kept by the investigator in a safe but accessible place.

Overall Study Plan

After obtaining the Ethics committee approval subjects were asked to visit the site. Informed consent was administered to study volunteers, and after obtaining their consent in writing, the subjects were asked about their medical history and the Investigator or his/her designee will conduct a physical examination. Demographics and vital signs were recorded. Blood sample were drawn from each subject for analysis of hematology, biochemistry and virology. Subjects were enrolled into the study after all the IC/EC criteria are met. Once the subject was found to be eligible, he or she was asked to visit the site as baseline visit (Day 0) where the IPs were dispensed sufficient until next scheduled visit.

Clinical Phase

Procedure

A] Screening Visit:

1. Informed consent
2. Demographics (height, weight, BMI and waist circumference)
3. Medical and medication history
4. FBG
5. Concomitant Medication Review
6. Physical examination
7. Vital Sign (temp, pulse, BP and respiratory rate)
8. CBC/Hematology
9. RFTs
10. LFTs
11. Lipid profile

12. BioMarkers (Apolipoproteins A1& B, Leptin, Adiponectin, CoQ10)
13. Urine Pregnancy Test
14. Mental Alertness
15. Quality of life Questionnaire
16. Adverse Event Review and Evaluation

B] Visit-1 (Day 0)

1. Randomization
2. IP dispensing and Accountability
3. Concomitant Medication Review
4. Vital Sign (temp, pulse, BP, and respiratory rate)
5. Adverse Event Review and Evaluation

C] Visit-2 (Day 45 ± 5 days)

1. Demographics
2. FBG
3. IP dispensing and Accountability
4. Concomitant Medication Review
5. Physical examination
6. Vital Sign (temp, pulse, BP, and respiratory rate)
7. CBC/Hematology
8. RFTs
9. LFTs
10. Mental alertness
11. Adverse events monitoring

D] Visit-3 (Day 90 ± 5 days)

1. Demographics
2. FBG
3. Concomitant Medication Review
4. Physical examination
5. Vital Sign (temp, pulse, BP, and respiratory rate)

6. CBC
7. RFTs
8. LFTs
9. Lipid profile
10. BioMarkers (Apolipoproteins A1& B, Leptin, Adiponectin, CoQ10)
11. Mental Alertness
12. Quality of life Questionnaire
13. Adverse Event Review and Evaluation
14. Organoleptic/ Feedback Questionnaire

Inclusion Criteria

Subjects fulfilling following criteria were included in the study:

1) Age/sex: men and women (1:1, equal distribution) aged 18-55 years (Preferably subgroup of age 18-35 and age 36-55, if feasible).
2) Subject with BMI 25-30 kg/m^2
3) Subjects who perceive themselves to be under stress and having a score of 14-24 on the Perceived Stress Scale (PSS).
4) Healthy subjects as determined by: Medical history, Physical examination and Clinical judgment of the investigator
5) Subject willing to provide written informed consent and comes for regular follow up.
6) Subjects who agree to stop from using supplements during the study.
7) Subjects willing to follow the suggested diet plan

Exclusion criteria:

Subjects fulfilling any one of the following criteria were excluded from the study:

1) Female subjects who are pregnant, lactating or planning to become pregnant during the study period.
2) Known history of any chronic illness taking regular pharmacological agents.
3) Significant Gastrointestinal (i.e. inflammatory bowel disease, celiac), liver or kidney disease
4) Cardiac condition that compromises normal function (e.g. mitral valve disease, heart failure)
5) History of major cardiovascular events in the last 1 year (stroke or myocardial infraction)

6) History of drug dependence or any severe co-morbid medical conditions.

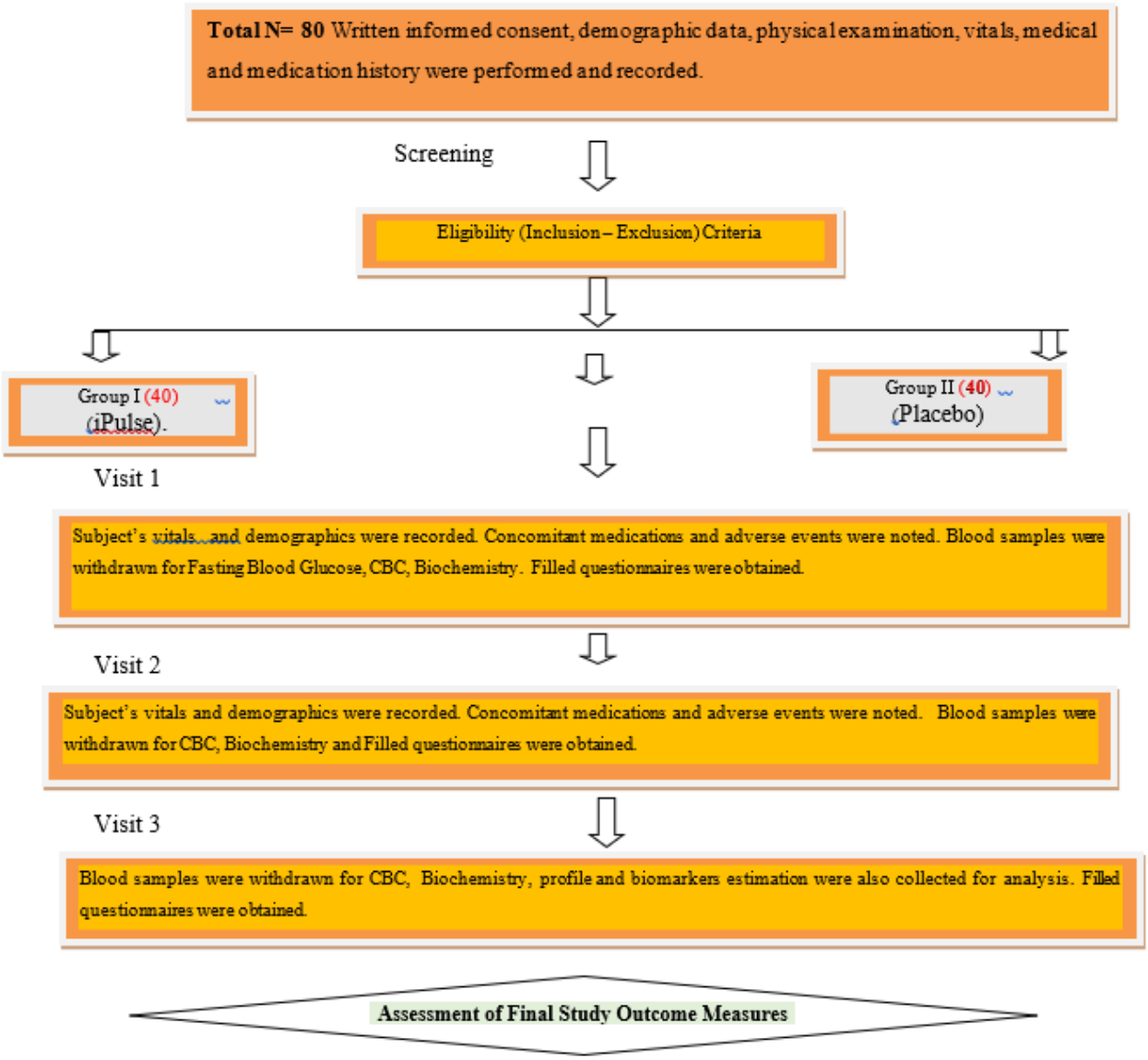
7) High alcohol intake (>2 standard drinks per day) or use of recreational drugs (such as cocaine, methamphetamine, marijuana, etc., Nicotine/Caffeine dependence.

8) Administration of any other multivitamins/herbal product/wellness products

9) Subject has participated in a clinical study within the last 30 days prior to entering this study.

Flow Chart of Study Activities

ASSESSMENT OF SAFETY



Specification of Safety Parameters

The study's safety parameters included vital signs and adverse events, which were compared from the subjects' baseline to the final visit.

Methods and Timing for Assessing, Recording, and Analyzing Safety Parameters

Adverse Events

AE, if any, were reported as per the guidelines of ICH E6. Any medical condition that was present at the time that the subject was screened were considered as baseline and not reported as an AE. However, if it deteriorated at any time during the study, it was recorded as an AE. All AEs were graded for severity (mild, moderate, severe and life threatening) and relationship to the study product (associated or not associated).

Any other important medical event that may not result in death, be life threatening, or require hospitalization, may be considered a serious adverse experience (SAE) when, based upon appropriate medical judgment, the event may jeopardize the subject and may require medical or surgical intervention to prevent one of the outcomes listed above. All SAEs were recorded on the appropriate CRF and SAE form, followed through with resolution by a study clinician reviewed and evaluated by a study clinician.

Reporting Procedures

For Adverse Events (AEs)

- Through telephone contacts and subject visits to the study site, the Investigator and/or designee inquired about adverse experiences and document the inquiry in the subject's medical chart.

- During visits to the site, the Monitor ensured that if an adverse experience was found, the Study Coordinator documented the following in the subject's chart and Case Report Form:

➢ Date and time (if applicable) the event started and ended.

➢ Description to the event.

- Severity of the event.
- Outcome of the event.
- Action taken and
- Relationship to study supplement

Treatment of Subjects

iPulse is a rich multi fruit blend juice to be ingested 30ml twice a day half an hour before breakfast and dinner.

Randomization

Investigational products duly labelled with randomization codes will be provided to the investigators by the sponsor through Radiant Research. Per the randomization schedule the investigator / designee will dispense IP bottles, two for each subject/day. The juice or IP bottles will be kept by the investigator in a safe but accessible place.

Statistical Analysis

The data generated from individual CRFs were compared between groups from Day 0 till Day 90. Student t test was employed for analyzing efficacy values between different visits, while 'p' value <0.05 was considered as statistical significance for the study.

RESULTS

The IP codes for the 2 groups were un-blinded towards end of the study during statistical analysis and it was revealed that Group I /Treatment A – received iPulse, Group II/Treatment B – received Placebo products respectively.

Demographics and baseline characteristics

Table 1 A: Descriptive statistics–Demographics: Age and Sex

Parameter/Statistics	Treatment A	Treatment B
Age (Years)		
N	35	35
Mean(SD)	43.3(7.56)	43.3(8.21)
Median	45.0	45.0
Min, Max	26,54	21,55
Sex, n (%)		
Female	21(52.5)	19(47.5)
Male	19(47.5)	21(52.5)

Table 1B: Descriptive statistics–Demographics (Height, Weight, BMI)

Parameter/ Statistics	Visit	Height (in Centimeters)		Weight (in Kilograms)		BMI (in kg/m^2)	
		Treatment A	Treatment B	Treatment A	Treatment B	Treatment A	Treatment B
N	Screening	40	40	40	40	40	40
Mean (SD)	Screening	163.7(5.77)	163.9(5.30)	78.18(6.080)	78.33(5.558)	29.19(1.308)	29.12(1.568)
Median	Screening	165.0	166.0	80.00	78.50	29.60	29.40
Min, Max	Screening	148,175	150,171	63.0,88.0	66.0,87.0	26.2,31.6	25.2,30.9
N	Visit 2	40	40	40	40	40	40
Mean (SD)	Visit 2	163.7(5.77)	163.9(5.30)	76.18(6.080)	77.33(5.558)	28.41(1.270)	28.77(1.518)
Median	Visit 2	165.0	166.0	78.00	77.50	28.75	29.00
Min, Max	Visit 2	148,175	150,171	61.0,86.0	65.0,86.0	25.5,30.9	24.9,30.5
N	Visit 3	40	40	40	40	40	40
Mean (SD)	Visit 3	163.7(5.77)	163.9(5.30)	74.38(6.105)	76.40(5.560)	27.72(1.232)	28.42(1.508)
Median	Visit 3	165.0	166.0	77.00	77.00	28.05	28.80
Min, Max	Visit 3	148,175	150,171	59.0,84.0	64.0,85.0	24.8,30.1	24.5,30.1

Safety Results:

Table 2 A: Descriptive statistics for vital signs: Temperature, Heart rate, Pulse rate and Respiratory rate

Parameter/ Statistics	Visit	Temperature (Fahrenheit)		Heart rate (beats/min)		Pulse rate (beats/min		Respiratory rate (breaths /min)	
		Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B
N	Screening	40	40	40	40	40	40	40	40
Mean (SD)	Screening	98.08(0.323)	97.96(0.590)	77.5(5.48)	77.3(4.88)	77.5(5.43)	77.3(4.88)	17.5(1.32)	18.3(1.43)
Median	Screening	98.10	98.10	78.0	77.5	78.0	77.5	17.0	18.0
Min, Max	Screening	97.2,98.6	96.3,99.0	64,87	66,86	64,87	66,86	16,20	15,20
N	Visit 1	40	40	40	40	40	40	40	40
Mean (SD)	Visit 1	98.08(0.323)	97.96(0.590)	77.5(5.48)	77.3(4.88)	77.5(5.43)	77.3(4.88)	17.5(1.32)	18.3(1.43)
Median	Visit 1	98.10	98.10	78.0	77.5	78.0	77.5	17.0	18.0
Min, Max	Visit 1	97.2,98.6	96.3,99.0	64,87	66,86	64,87	66,86	16,20	15,20
N	Visit 2	40	40	40	40	40	40	40	40
Mean (SD)	Visit 2	96.94(0.799)	96.65(0.749)	76.4(5.47)	76.2(4.92)	76.3(5.58)	76.2(4.89)	16.5(1.32)	17.3(1.48)
Median	Visit 2	97.30	96.65	77.0	76.5	77.0	76.0	16.0	17.0
Min, Max	Visit 2	95.5,98.7	95.0,98.5	63,86	65,85	63,86	65,85	15,19	13,20
N	Visit 3	40	40	40	40	40	40	40	40
Mean (SD)	Visit 3	95.92(0.802)	95.81(0.725)	75.3(5.51)	75.2(4.82)	75.3(5.51)	75.2(4.87)	15.6(1.32)	16.3(1.45)
Median	Visit 3	96.25	95.65	76.5	75.5	76.5	75.5	15.0	16.0
Min, Max	Visit 3	94.5,97.7	94.3,98.0	61,84	64,84	61,84	64,84	14,18	12,19

Table 2 B: Descriptive statistics for vital signs- Systolic and Diastolic Blood Pressure (mmHg)

Parameter/ Statistics	Visit	Systolic Blood Pressure(mmHg)		Diastolic Blood Pressure(mmHg)	
		Treatment A	Treatment B	Treatment A	Treatment B
N	Screening	40	40	40	40
Mean (SD)	Screening	126.0(4.14)	125.4(4.51)	82.1(4.71)	81.2(4.18)
Median	Screening	125.0	124.0	82.0	80.5
Min, Max	Screening	120,137	118,135	73,92	72,92
N	Visit 1	40	40	40	40
Mean (SD)	Visit 1	126.0(4.14)	125.4(4.51)	82.1(4.71)	81.2(4.18)
Median	Visit 1	125.0	124.0	82.0	80.5
Min, Max	Visit 1	120,137	118,135	73,92	72,92
N	Visit 2	40	40	40	40
Mean (SD)	Visit 2	124.4(3.96)	123.8(4.49)	82.1(4.71)	81.2(4.18)
Median	Visit 2	123.5	123.5	82.0	80.5
Min, Max	Visit 2	117,135	116,133	73,92	72,92
N	Visit 3	40	40	40	40
Mean (SD)	Visit 3	122.6(3.98)	121.7(4.42)	82.1(4.71)	81.2(4.18)
Median	Visit 3	123.0	121.0	82.0	80.5
Min, Max	Visit 3	115,132	114,130	73,92	72,92

Table 3 A: Descriptive statistics for Lab Data

Parameter/ Statistics	Visit	RBC (mill/cumm)		WBC (Cells/Cumm)		Platelet Count (1akhs/cumm)		ESR (mm1sthr)	
		Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B
N	Screening	20	20	40	40	40	40	35	35
Mean (SD)	Screening	4.85(0.443)	4.71(0.319)	7.131(1.5226)	7.205(1.4508)	2.382(0.6902)	2.378(0.7047)	12.0 (6.66)	12.3 (5.90)
Median	Screening	4.90	4.70	7.365	7.240	2.355	2.340	8	11
Min, Max	Screening	3.9,5.5	4.1,5.2	3.87,9.56	4.56,10.43	1.42,4.11	1.44,4.11	4,29	5,28
N	Visit 3	40	40	40	40	40	40	35	35
Mean (SD)	Visit 3	4.99(0.422)	4.88(0.492)	7.436(1.1333)	7.243(1.2172)	2.428(0.5122)	2.343(0.6168)	8.4 (4.02)	8.1 (4.02)
Median	Visit 3	5.05	4.80	7.530	7.285	2.380	2.250	6	7
Min, Max	Visit 3	4.2,6.1	3.8,6.8	4.52,9.21	5.11,9.61	1.74,3.88	1.56,3.96	5,18	5,21

Table 3 B: Descriptive statistics for Lab Data

Parameter/ Statistics	Visit	Neutrophils (%)		Lymphocytes (%)		Monocytes (%)		Eosinophils (%)	
		Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B
N	Screening	40	40	40	40	40	40	40	40
Mean (SD)	Screening	63.2(5.52)	64.5(4.30)	31.0(5.13)	29.8(4.52)	3.5(1.20)	3.4(1.10)	2.4(0.80)	2.3(0.94)
Median	Screening	63.0	65.0	30.0	30.0	3.0	3.0	2.0	2.0
Min, Max	Screening	54,74	55,72	22,41	22,40	1,6	2,6	1,4	1,4
N	Visit 3	40	40	40	40	40	40	40	40
Mean (SD)	Visit 3	63.1(3.82)	64.0(3.34)	32.0(3.62)	31.2(3.38)	2.9(0.83)	2.7(0.75)	2.1(0.55)	2.4(0.53)
Median	Visit 3	62.5	65.0	32.5	30.0	3.0	3.0	2.0	2.0
Min,Max	Visit 3	58,70	56,70	26,38	25,38	2,5	2,5	1,3	1,3

Table 3 C: Descriptive statistics for Lab Data

Parameter/ Statistics	Visit	Urea (mg/dl)		Creatinine (mg/d1)		SGOT (U/L)		SGPT (U/L)	
		Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B
N	Screening	40	40	40	40	40	40	40	40
Mean (SD)	Screening	28.80(4.966)	29.40(4.793)	0.89(0.151)	0.90(0.113)	35.22(10.010)	33.05(9.992)	24.08(12.134)	22.85(12.340)
Median	Screening	29.30	30.20	0.85	0.94	33.33	31.29	20.78	17.72
Min, Max	Screening	18.2,37.2	19.6,38.2	0.7,1.2	0.7,1.2	15.7,55.3	17.9,52.1	9.4,48.1	9.0,47.4
N	Visit 2	40	40	40	40	40	40	40	40
Mean (SD)	Visit 2	0.00(0.000)	0.00(0.000)	27.44(4.249)	29.57(4.291)	0.87(0.106)	0.90(0.091)	0.58(0.133)	0.65(0.159)
Median	Visit 2	0.00	0.00	27.89	29.43	0.88	0.91	0.59	0.66
Min, Max	Visit 2	0.0,0.0	0.0,0.0	17.3,35.4	21.3,39.4	0.7,1.1	0.7,1.1	0.3,0.8	0.3,0.9
N	Visit 3	40	40	40	40	40	40	40	40
Mean (SD)	Visit 3	27.17(4.444)	29.59(4.784)	0.85(0.108)	0.92(0.089)	31.25(7.710)	33.20(8.837)	20.73(9.389)	22.88(11.243)
Median	Visit 3	27.82	29.35	0.87	0.93	31.90	32.87	18.17	18.00
Min, Max	Visit 3	17.8,34.5	19.6,40.1	0.7,1.1	0.7,1.1	15.7,44.3	18.4,50.2	10.6,40.7	10.4,45.2

Table 3 D: Descriptive statistics for Lab Data

Parameter/ Statistics	Visit	Total Cholesterol (mg/dl)		Triglycerides (mg/dl)		HDL Cholesterol (mg/dl)		LDL Cholesterol (mg/dl)	
		Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B	Treat-ment A	Treat-ment B
N	Screening	40	40	40	40	40	40	40	40
Mean (SD)	Screening	209.35(29.036)	210.31(24.724)	145.89(37.503)	145.63(30.859)	41.28(6.333)	41.23(6.229)	68.60(12.576)	71.03(10.850)
Median	Screening	214.32	212.40	164.50	149.77	40.50	39.00	70.50	74.00
Min, Max	Screening	152.0,265.0	165.0,249.5	74.2,191.3	74.7,189.7	32.0,56.0	32.0,55.0	48.0,90.0	44.0,86.0
N	Visit 2	40	40	40	40	40	40	40	40
Mean (SD)	Visit 2	31.86(7.933)	32.87(8.587)	22.27(10.488)	22.24(11.069)	130.91(31.496)	147.68(30.291)	44.29(5.427)	41.56(5.873)
Median	Visit 2	30.76	31.68	18.98	16.34	144.27	151.37	42.90	40.25
Min, Max	Visit 2	15.3,45.4	19.6,47.3	10.3,45.3	10.3,44.2	65.3,182.5	80.3,196.3	35.2,56.2	32.6,56.1
N	Visit 3	40	40	40	40	40	40	40	40
Mean (SD)	Visit 3	171.89(11.588)	200.86(23.066)	121.04(27.075)	149.01(29.632)	47.35(4.408)	42.40(5.419)	59.55(7.872)	71.30(9.493)
Median	Visit 3	173.26	200.38	126.95	150.83	46.46	42.55	60.43	72.98
Min, Max	Visit 3	146.3,191.5	160.4,235.1	67.3,185.6	82.4,198.5	38.2,55.4	33.4,54.2	47.3,80.7	48.2,84.6

Table 3 E: Descriptive statistics for Lab Data

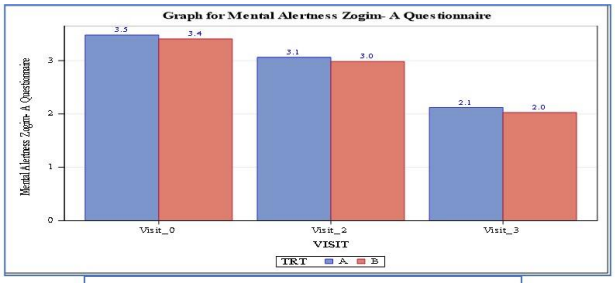
Parameter/ Statistics	Visit	Fasting Blood Glucose (mg/dl)		T. Bilirubin (mg/dl)	
		Treatment A	Treatment B	Treatment A	Treatment B
N	Screening	40	40	40	40
Mean (SD)	Screening	100.55(10.900)	102.30(14.070)	0.62(0.189)	0.64(0.187)
Median	Screening	101.00	106.00	0.63	0.66
Min, Max	Screening	68.0,117.0	61.0,119.0	0.3,0.9	0.2,0.9
N	Visit 2	40	40	40	40
Mean (SD)	Visit 2	64.03(9.597)	71.25(10.452)	0.58(0.133)	0.65(0.159)
Median	Visit 2	66.25	73.25	0.59	0.66
Min, Max	Visit 2	48.2,84.3	45.2,88.5	0.3,0.8	0.3,0.9
N	Visit 3	40	40	40	40
Mean (SD)	Visit 3	97.68(7.161)	100.23(8.263)	0.54(0.123)	0.64(0.152)
Median	Visit 3	97.50	101.00	0.54	0.66
Min, Max	Visit 3	85.0,112.0	83.0,115.0	0.3,0.8	0.3,0.9

Table 4: Descriptive statistics for Lab Data - Urine Pregnancy Test

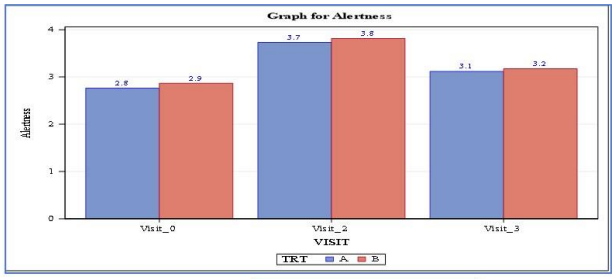
Parameter/Statistics	Visit	Treatment A	Treatment B
Yes	Screening	21(52.5)	19(47.5)
No	Screening	19(47.5)	21(52.5)

ASSESSMENT OF EFFICACY

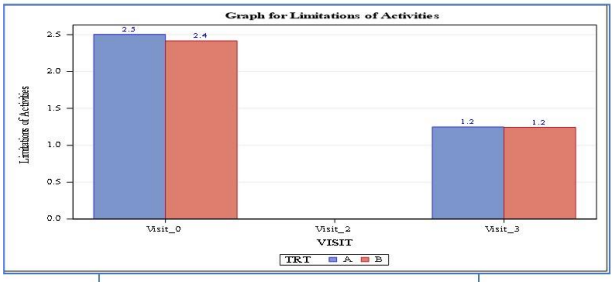
Efficacy variable(s)



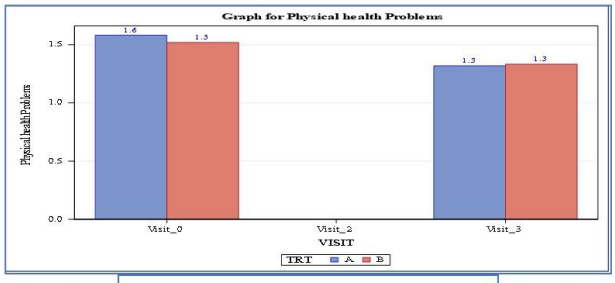
Mental Alertness Zogim- A Questionnaire



Graph for Alertness

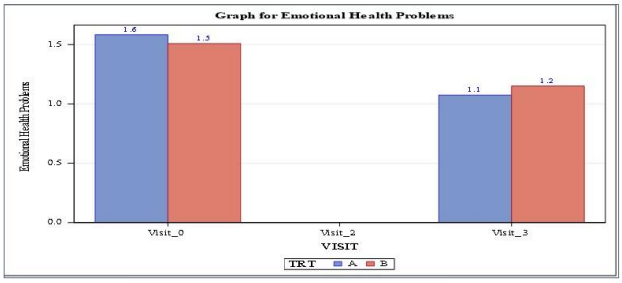


Graph for Limitations of activities

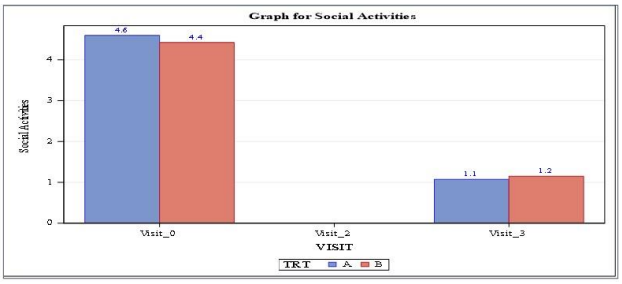


Graph for Physical health Problems

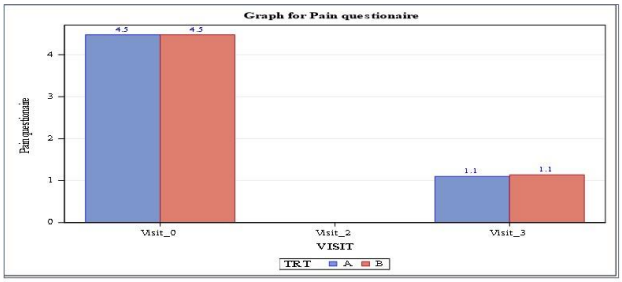
Graph 1: Comparative Descriptive Statistics for Efficacy parameters- *Mental Alertness Zogim- A Questionnaire, Alertness,* Limitations of activities and Physical health Problems



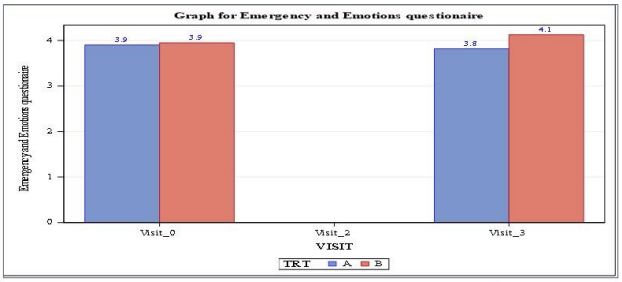
Emotional Health Problems



Social Activities

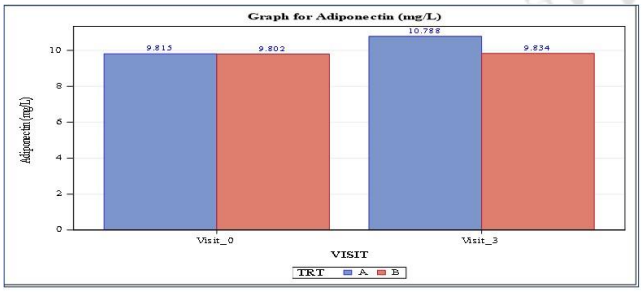


Social Activities (pain questionnaire)

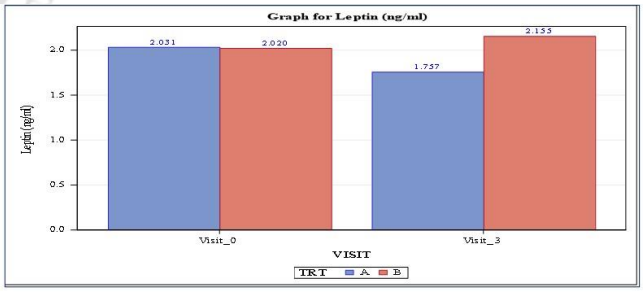


Emergency and Emotions questionnaire

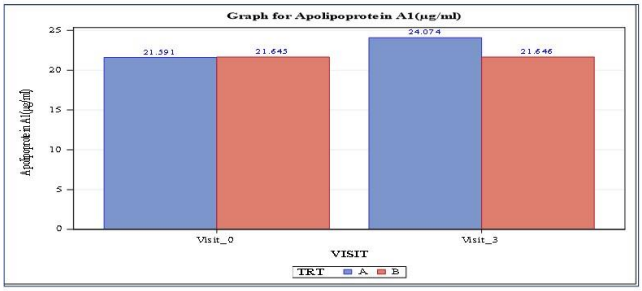
Graph 2: Comparative Descriptive Statistics for Efficacy parameters – Emotional Health Problems, Social Activities, Pain and Emergency and Emotions questionnaire



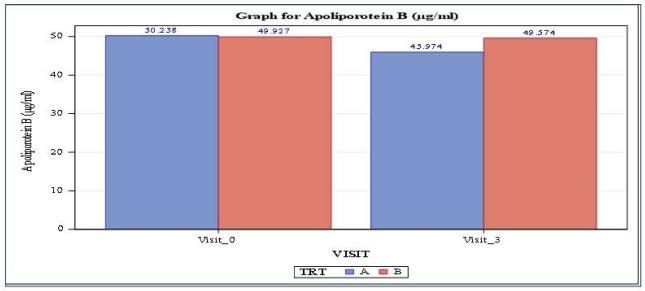
Adiponectin (mg/L)



Leptin (ng/ml)

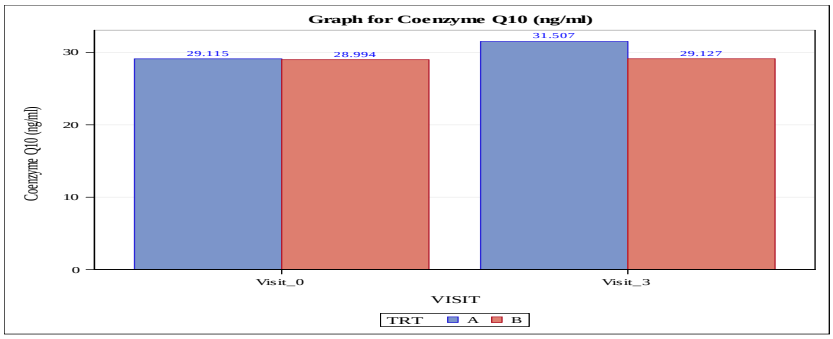


Apolipoprotein A1(µg/ml)



Apoliporotein B (µg/ml)

Graph 3: Comparative Descriptive Statistics for Efficacy parameters – Adiponectin (mg/L), Leptin (ng/ml), Apolipoprotein A1(µg/ml) and Apoliporotein B (µg/ml)



Graph 4: Comparative Descriptive Statistics for Efficacy parameters – Coenzyme Q10 (ng/ml)

DISCUSSION

iPulse is a proprietary formula designed for effective weight management. It is enriched with time tested herbal extracts, powders and naturally derived proteins that provide the food and energy which are required for daily life.

The trial was conducted in Sushrutha Ayurvedic Medical College and Hospital, Anekal, Taluk Bengaluru– 560105, India, post Institutional Ethics Committee approval /favorable opinion on the trial proposal. Eligible subjects were enrolled into the study only after obtaining their consent in writing. The first patient's first visit was on 03 Oct 2021, last patient's first visit was on 12 Oct 2021 and last patient's last visit was on 09 Jan 2022. Subjects of same age group, height, weight, BMI and other demographics (Table 1A and 1B) between the 2 treatment arms with equal proportion of both male and female were enrolled.

Safety Parameters: Vital signs for the 2 treatment group subjects were measured at all the study visits. Table 2 shows average temperature of study subjects across all the visits. Similarly other vital parameters (Table 2A and 2B) like heart rate, pulse rate, respiratory rate, systolic blood pressure and diastolic blood pressure. These vital sign parameters were found to be normal for all the study subjects and did not have any clinical or statistically significant abnormal values when compared between and within groups, implying that the test product has no safety issues post 90 days of oral administration.

Physical examination was performed, medical history, were completely normal across all the treatment groups across all the study visits. None of these safety lab data has any statistically significant changes from baseline (Day 0) visit values to that of their respective last visit values. This indicates that the product under testing is completely safe for oral consumption.

Laboratory safety Data (Table 3A, 3B, 3C, 3D, 3E): Hematology parameters like RBC, Platelet count, WBC, Neutrophils, Lymphocytes, Eosinophils, Monocytes & Blood urea, Serum Creatinine, SGOT, SGPT, Total Cholesterol, Triglycerides, HDL Cholesterol, LDL Cholesterol, Fasting blood glucose, Total Bilirubin are completely normal before and after the treatment periods across all the study groups.

Urine pregnancy test was performed at the time of screening (Table 4) to ensure no women of child bearing potential were enrolled into the trial.

Efficacy parameters: Mental alertness questionnaire Zogim A (Graph 1) consisting a series of questions was administered to all the subjects across all through the study visits, and an alertness scale, demonstrates that there is a major improvement in the mental alertness within the subjects by end of the study duration. The quality of life (QOL) questionnaire and the limitation of daily activities, has a remarkable improvement in the overall improvement in the subject's life quality and their ability to come back from limitations of their routine daily activities by end of the study period.

Physical health – A similar questionnaire on the physical health problems was administered to the study subjects across all the study visits (Graph 2) with a better result by visit 3 when compared to that of visit 0 values. Similarly emotional health of the subjects & social activities was evaluated from screening to last visit (Graph 2), pain questionnaire (Graph 2), emergency & emotions questionnaire (Graph 2). The efficacy parameters assessed through the questionnaires reached statistical significance from baseline to visit 2 and baseline to visit 3.

The organoleptic / feedback questionnaire administered on the last visit showed that the test product had better acceptability than the placebo arm.

Biomarkers: The 5 biomarkers - anti-inflammatory /anti-obese markers, Apolipoproteins A1& B, Leptin, Adiponectin, CoQ10, were assessed on the initial and last visits. The results (Graphs 3-4). All these serum biomarkers had showed a statistical significance ($p<0.01$) by visit 3.

There were no Adverse and Serious Adverse Events reported.

There were no protocol deviations observed during the course of the trial. The compliance of investigational product is 100% by all the completed study subjects.

CONCLUSION:

The study demonstrated an excellent and significant efficacy on overweight cases in improving the Biomarkers related to obesity. Study also demonstrated the safety profile of the product (iPulse). Subjects who were mild to moderate range of overweight and received iPulse showed significant improvement in their fasting blood glucose levels, Leptin, Apolipoproteins A1& B, Leptin, Adiponectin, CoQ10 were better than the placebo group arm at the end of the study (Day 90). These results corroborate even with various cholesterol parameters and also the feedback questionnaire which shows that the mean/average. This study clearly indicates that iPulse has significant anti-inflammatory in the study subjects as well. The objective questionnaires on the mental alertness and quality of life also demonstrated a significant improvement in the overall well-being of study subjects towards end of the study period. Therefore, it is concluded that iPulse has a definite role in improving the overweight condition along with improving the quality of life when the subjects administered the product orally for 90 consecutive days.

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