

Supplementary Materials

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Table S1 Nutritional Composition of the Meal Replacement Food

Item	Per 100g
Energy, kcal	370
Protein, g	45
Fat (non-trans fatty acids), g	7.5
Carbohydrates, g	21.4
Dietary Fiber, g	17.8
Sodium, mg	571
Vitamin A, μg	250
Vitamin D, μg	5.8
Vitamin E, mg	11.25(α -TE)
Vitamin B1, mg	2.75
Vitamin B2, mg	1.33
Vitamin B6, mg	1.08
Vitamin B12, μg	2.75
Vitamin C, mg	70.60
Niacin, mg	13.83
Folic Acid, μg	180
Pantothenic Acid, mg	4.83
Potassium, mg	288
Magnesium, mg	227
Calcium, mg	598
Iron, mg	8.4
Zinc, mg	10
L-Carnitine, g	0.834
Taurine, g	0.375

Table S2 Ingredients of Meal Replacement Food

Category	Ingredient Name
Protein	Soy Protein Isolate, Skim Milk Powder, Calcium Caseinate, Whey Protein Concentrate, Rice Protein Powder
Fat	Medium-Chain Triglyceride Microencapsulated Powder, Sunflower Oil Microencapsulated Powder, Flaxseed Oil, Phospholipids
Vitamins	dl- α -Tocopheryl Acetate, Sodium L-Ascorbate, Niacinamide, Calcium D-Pantothenate, Thiamine Hydrochloride, Pyridoxine Hydrochloride, Riboflavin, Vitamin A Acetate, Folic Acid, Cholecalciferol, Cyanocobalamin, β -Carotene
Minerals	Magnesium Carbonate, Zinc Sulfate, Ferric Pyrophosphate, Calcium Carbonate, Edible Salt
Carbohydrates & Dietary Fiber	Maltooligosaccharides, Polydextrose, Maltodextrin, Isomaltooligosaccharides, Fructooligosaccharides, Oat Fiber, Wheat Fiber, Konjac Flour, Psyllium Husk Powder, Resistant Dextrin
Other Additives	Potato Extract, Malt Extract, Pomegranate Juice Powder, L-Theanine, Epigallocatechin Gallate, Phytosterol Esters, L-Carnitine L-Tartrate, Coconut Cream Powder

Table S3 Changes of Anthropometric and Metabolic Indicators in MRG

Variables	45 days-Baseline		90 days-Baseline	
	Estimate (95%CI)	P	Estimate (95%CI)	P
Weight, kg	-3.97(-4.74,-3.21)	<0.001*	-7.68(-8.87,-6.49)	<0.001*
BMI, kg/m ²	-1.28(-1.57,-0.99)	<0.001*	-2.59(-3.04,-2.14)	<0.001*
BFP, %	-1.51(-1.83,-1.19)	<0.001*	-3.46(-3.99,-2.92)	<0.001*
SBP, mmHg	-3.55(-7.27,0.18)	0.062	-6.27(-10.86,-1.69)	0.008*
DBP, mmHg	-2.07(-4.8,0.67)	0.136	-3.59(-6.3,-0.88)	0.010*
TC, mmol/L	-0.31(-0.49,-0.13)	0.001*	-0.41(-0.63,-0.2)	<0.001*
TG, mmol/L	-0.52(-0.84,-0.21)	0.001*	-0.63(-0.99,-0.27)	0.001*
FBG, mmol/L	-0.48(-0.81,-0.14)	0.006*	-0.54(-0.98,-0.11)	0.015*
ALT, U/L	-6.82(-10.71,-2.93)	0.001*	-8.31(-13.29,-3.34)	0.001*

*P<0.05

Table S4 Changes of Anthropometric and Metabolic Indicators in DCG

Variables	45 days-Baseline		90 days-Baseline	
	Estimate (95%CI)	P	Estimate (95%CI)	P
Weight, kg	-1.96(-2.81,-1.12)	<0.001*	-3.87(-5.19,-2.56)	<0.001*
BMI, kg/m ²	-0.66(-0.98,-0.35)	<0.001*	-1.25(-1.73,-0.76)	<0.001*
BFP, %	-1.11(-1.46,-0.76)	<0.001*	-1.31(-1.9,-0.72)	<0.001*
SBP, mmHg	-3.35(-7.41,0.71)	0.104	-4.65(-9.65,0.35)	0.068
DBP, mmHg	-1.58(-4.52,1.37)	0.289	-2.82(-5.73,0.1)	0.058
TC, mmol/L	-0.08(-0.3,0.14)	0.458	-0.04(-0.3,0.22)	0.755
TG, mmol/L	-0.34(-0.7,0.02)	0.062	-0.31(-0.72,0.1)	0.133
FBG, mmol/L	-0.35(-0.71,0.02)	0.065	-0.38(-0.86,0.1)	0.116
ALT, U/L	-4.20(-8.64,0.25)	0.064	-7.34(-13.01,-1.68)	0.012*

*P<0.05

Table S5 Changes of Anthropometric and Metabolic Indicators in MRG(Adjust the baseline BMI)

Variables	45 days-Baseline		95 days-Baseline	
	Estimate (95%CI)	P	Estimate (95%CI)	P
Weight, kg	-3.93(-4.74,-3.12)	<0.001*	-7.75(-9.01,-6.48)	<0.001*
BMI, kg/m ²	-1.28(-1.61,-0.95)	<0.001*	-2.59(-3.1,-2.09)	<0.001*
BFP, %	-1.63(-1.96,-1.3)	<0.001*	-3.71(-4.28,-3.14)	<0.001*
SBP, mmHg	-3.55(-7.3,0.21)	0.064	-6.27(-10.73,-1.81)	0.006*
DBP, mmHg	-2.07(-4.82,0.68)	0.139	-3.59(-6.31,-0.88)	0.010*
TC, mmol/L	-0.32(-0.51,-0.13)	0.001*	-0.43(-0.64,-0.21)	<0.001*
TG, mmol/L	-0.48(-0.76,-0.21)	0.001*	-0.51(-0.82,-0.19)	0.002*
FBG, mmol/L	-0.46(-0.8,-0.12)	0.009*	-0.48(-0.93,-0.03)	0.036*
ALT, U/L	-6.08(-10.06,-2.1)	0.003*	-7.17(-12.99,-1.35)	0.016*

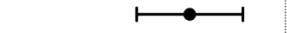




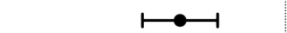
*P<0.05

Table S6 Changes of Anthropometric and Metabolic Indicators in DCG (Adjust the baseline BMI)

Variables	45 days-Baseline		95 days-Baseline	
	Estimate (95%CI)	P	Estimate (95%CI)	P
Weight, kg	-1.78(-2.66,-0.9)	<0.001*	-3.49(-4.87,-2.12)	<0.001*
BMI, kg/m ²	-0.66(-1.02,-0.3)	0.001*	-1.25(-1.8,-0.7)	<0.001*
BFP, %	-1.09(-1.45,-0.73)	<0.001*	-1.34(-1.96,-0.71)	<0.001*
SBP, mmHg	-2.97(-7.18,1.24)	0.164	-3.2(-8.2,1.8)	0.207
DBP, mmHg	-1.36(-4.4,1.68)	0.376	-2.36(-5.36,0.64)	0.121
TC, mmol/L	-0.08(-0.3,0.14)	0.460	-0.04(-0.3,0.21)	0.750
TG, mmol/L	-0.34(-0.65,-0.03)	0.031*	-0.31(-0.66,0.03)	0.075
FBG, mmol/L	-0.32(-0.7,0.06)	0.094	-0.38(-0.88,0.11)	0.126
ALT, U/L	-4.82(-9.42,-0.22)	0.040*	-6.89(-11.95,-1.83)	0.008*

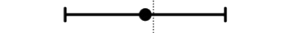
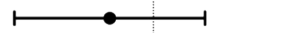

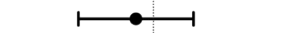



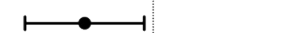

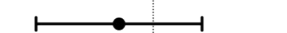


*P<0.05

Table S7 Difference in Anthropometric Indicators Improvement (Adjust the baseline BMI)

Variables	Time	Estimate(95%CI)	Forest Plot	P
Weight, kg	45 days	-2.15 (-3.35 , -0.96)		<0.001*
	90 days	-4.25 (-6.12 , -2.38)		<0.001*
BMI, kg/m ²	45 days	-0.62 (-1.10 , -0.13)		0.015*
	90 days	-1.35 (-2.09 , -0.60)		<0.001*
BFP, %	45 days	-0.54 (-1.03 , -0.05)		0.030*
	90 days	-2.37 (-3.22 , -1.53)		<0.001*

*P<0.05

Table S8 Difference in Metabolic Indicators Improvement (Adjust the baseline BMI)

Variables	Time	Estimate(95%CI)	Forest Plot	P
SBP, mmHg	45 days	-0.57 (-6.21 , 5.06)		0.840
	90 days	-3.07 (-9.78 , 3.63)		0.364
DBP, mmHg	45 days	-0.71 (-4.81 , 3.40)		0.732
	90 days	-1.23 (-5.28 , 2.82)		0.547
ALT, U/L	45 days	-1.26 (-7.34 , 4.82)		0.681
	90 days	0.28 (-7.43 , 7.99)		0.943
TC, mmol/L	45 days	-0.24 (-0.53 , 0.05)		0.110
	90 days	-0.39 (-0.72 , -0.05)		0.025*
TG, mmol/L	45 days	-0.14 (-0.56 , 0.27)		0.488
	90 days	-0.19 (-0.66 , 0.28)		0.417
FBG, mmol/L	45 days	-0.14 (-0.65 , 0.37)		0.597
	90 days	-0.09 (-0.76 , 0.57)		0.778

*P<0.05