



XXIX IFSO World Congress

1-4 September 2026 | Toronto, Canada

**EFFICACY OF A SPECIALIZED MULTIVITAMIN IN
PREVENTING NUTRITIONAL DEFICIENCIES IN
PATIENTS ON GLP-1 RECEPTOR AGONISTS FOR
WEIGHT LOSS: A RANDOMIZED CONTROLLED TRIAL**

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BALANCE Trial • [ClinicalTrials.gov NCT06981936](https://clinicaltrials.gov/ct2/show/study/NCT06981936)

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TORONTO2026

**The Future of Obesity Management:
From Weight Loss to Health Gain**



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Disclosure

Nothing to disclose

No honoraria, consulting fees, funded research, royalties, stock options, ownership or employment relevant to this presentation.



Why this trial?

24–39%

reduction in daily energy intake
reported with GLP-1 therapy¹

>20%

new nutritional-deficiency diagnosis
within 12 months in real-world data²

No RCT

had directly tested routine
multivitamin prevention

GLP-1–based weight loss creates a plausible nutritional gap: less food, less dietary variety, and pre-existing micronutrient vulnerability in obesity.

Unanswered question: does routine specialized multivitamin supplementation prevent new deficiencies?

1. Johnson B, Milstead M, Thomas O, et al. Investigating nutrient intake during use of glucagon-like peptide-1 receptor agonist: a cross-sectional study. *Front Nutr*. 2025;12:1566498. doi:10.3389/fnut.2025.1566498
2. Butsch WS, Sulo S, Chang AT, et al. Nutritional deficiencies and muscle loss in adults with type 2 diabetes using GLP-1 receptor agonists: a retrospective observational study. *Obes Pillars*. 2025;15:100186. doi:10.1016/j.obpill.2025.100186


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BALANCE: randomized, double-blind, placebo-controlled


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152

adults randomized 1:1

12 months

double-blind follow-up



Elan Balance

One tablet daily

Registered in Egypt

- Adults 18–65 years, BMI 27.0–34.9 kg/m², on semaglutide, tirzepatide or liraglutide
- Balance specialized multivitamin once daily vs visually identical placebo
- Stratified by BMI category and GLP-1 medication; standardized diet and exercise counselling
- **Primary endpoint: ≥1 new laboratory-confirmed deficiency among 14 analytes at 12 months**
- **Assessment tools: CTCAE v5.0 (adverse events) • intake logs + pill counts (compliance)**
- Conservative intention-to-treat analysis; prespecified sensitivity and subgroup analyses

152 randomized
1:1 allocation

Balance n=76
once daily

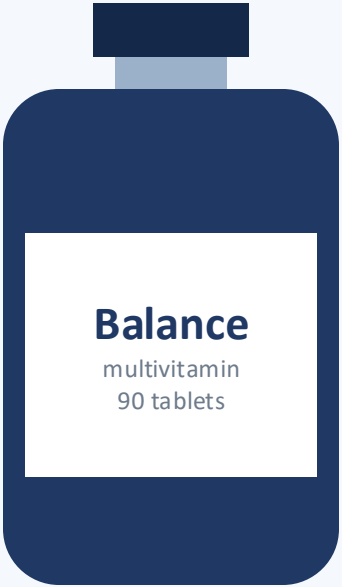
Placebo n=76
identical capsule

Labs
0–3–6–9–12 mo

Registration: ClinicalTrials.gov NCT06981936 • Single-centre, Medical Research Institute, Alexandria University



Study product: Elan Balance — one tablet daily



Balance
multivitamin
90 tablets

Registered in Egypt

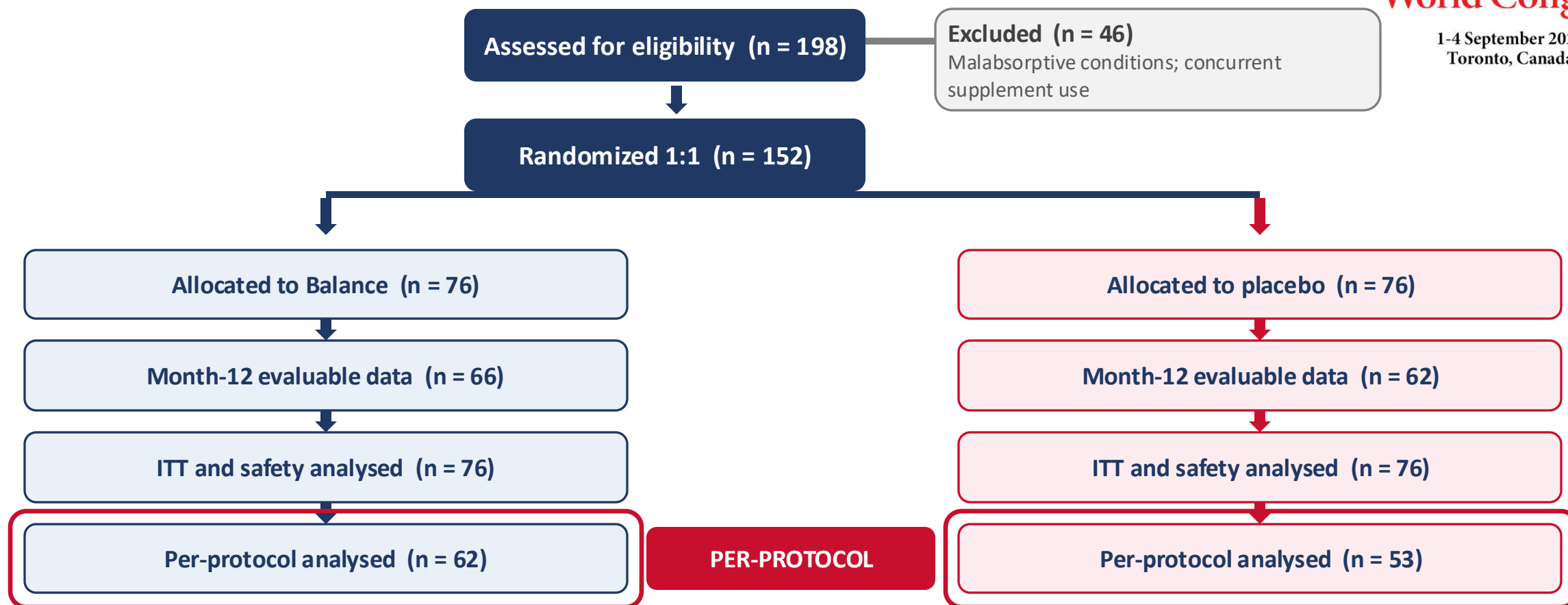
Elan Balance
WLSvital v.o.f., the Netherlands
Halal certified; vegan/vegetarian

Vitamin	Amount	%NRV	Mineral / other	Amount	%NRV
Vitamin A (β-carotene)	800 µg RE	100%	Iron (ferrous fumarate)	24 mg	179%
Vitamin B1 (thiamine)	3 mg	273%	Iodine (potassium iodide)	150 µg	100%
Vitamin B2 (riboflavin)	3.5 mg	250%	Copper (citrate)	3 mg	300%
Vitamin B3 (niacin)	30 mg NE	188%	Manganese (citrate)	3 mg	150%
Vitamin B5 (pantothen.)	15 mg	250%	Molybdenum (Na molybd.)	50 µg	100%
Vitamin B6 (P-5-P)	0.21 mg	15%	Selenium (Na selenate)	55 µg	100%
Biotin (B8)	600 µg	1200%	Zinc (citrate)	28 mg	280%
Folate (B11, folic acid)	300 µg	150%	Choline (bitartrate)	10 mg	—
Vitamin B12 (methylcob.)	500 µg	20000%	Caffeine (anhydrous)	70 mg	—
Vitamin C	120 mg	150%			
Vitamin D3 (cholecalcif.)	3000 IU	1500%			
Vitamin E (α-tocopheryl)	15 mg	125%			

Single tablet, once daily
%NRV = percentage of the EU Nutrient Reference Value. Amounts are per tablet, as specified in the BALANCE protocol. Placebo was visually identical.



CONSORT participant flow



Per-protocol population excluded participants who **dropped out** or had no month-12 labs, **who stopped their GLP-1 injectable**, or who took less than 80% of their prescribed tablets. Primary-endpoint status was missing in 23 participants (15.1%): 10 Balance, 13 placebo.

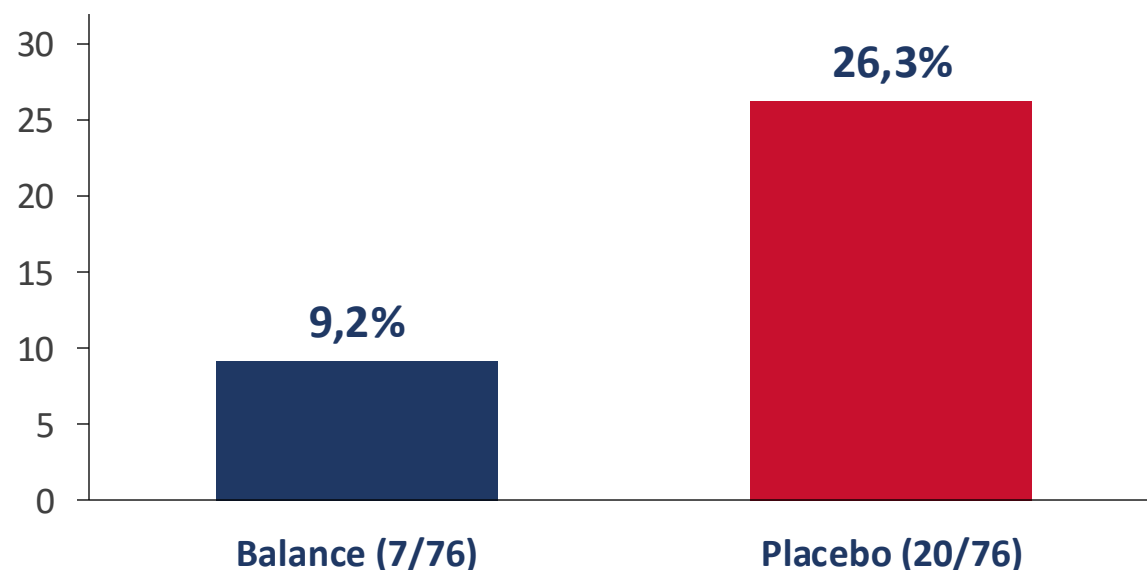
Participants bought and paid for their own GLP-1 medication



Primary endpoint: fewer new deficiencies

New-onset deficiency at 12 months (%)

■ Balance (7/76) ■ Placebo (20/76)



OR 0.29

95% CI 0.10–0.77 • $p = 0.010$

ARR 17.1 pp

NNT $\approx$ 6 over 12 months

aOR 0.24

95% CI 0.09–0.63 • $p = 0.004$

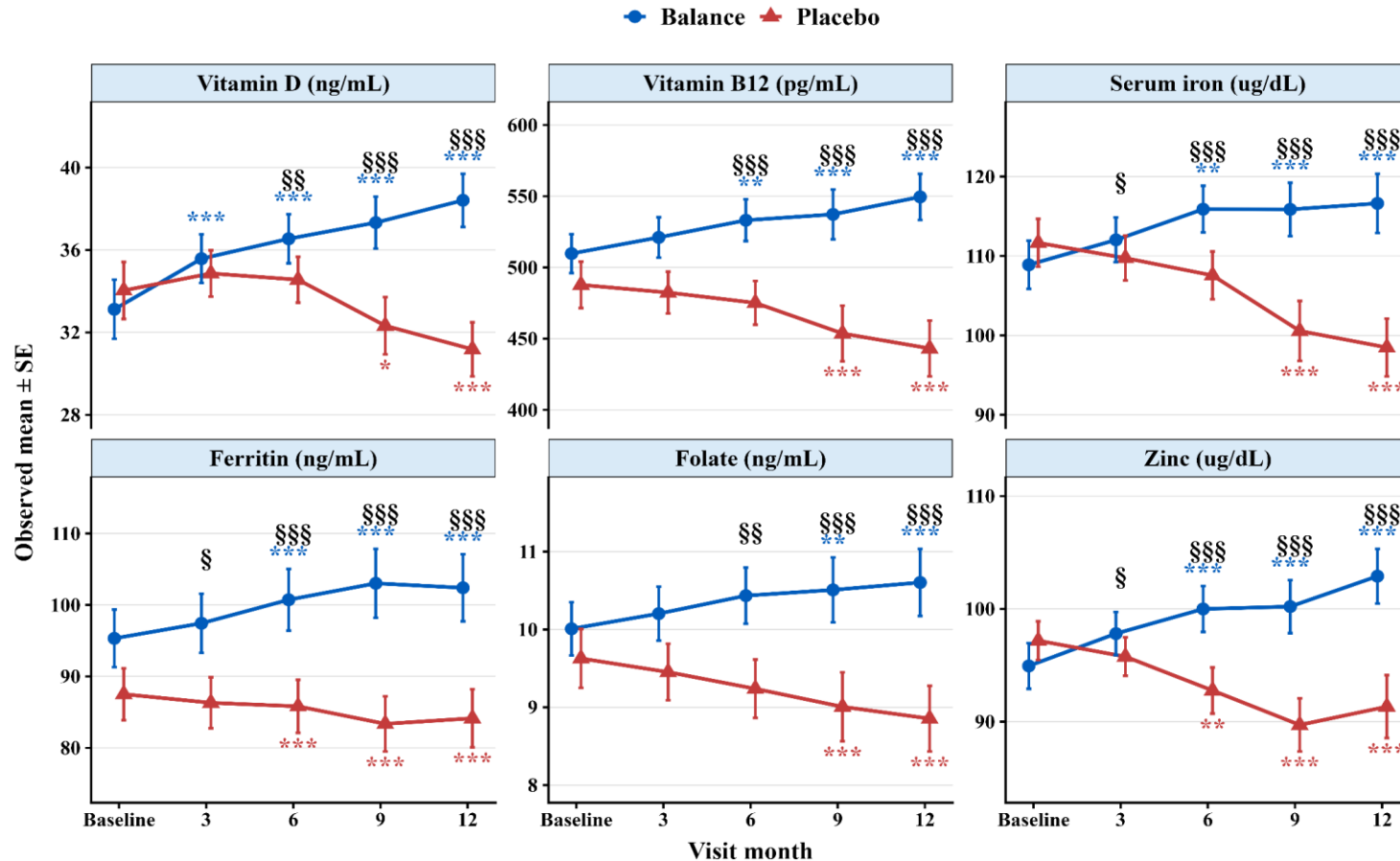
About one in ten on Balance developed a new deficiency versus about one in four on placebo — roughly a two-thirds lower risk, consistent in every sensitivity analysis.



Broad micronutrient signal — separation from month 6

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* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ for within-group difference from baseline.
§ $p < 0.05$, §§ $p < 0.01$, §§§ $p < 0.001$ for between-group difference in change from baseline.

**Balance preserved,
placebo declined**

- Vitamin D, B12, serum iron
- Ferritin, folate, zinc
- Copper, vitamins A, B1, B6

Sustained to month 12

**Calcium and magnesium
remained stable in both arms**



Secondary endpoints

Micronutrient levels → UP ON BALANCE, DOWN ON PLACEBO

- Separation from month 6, sustained to month 12
- Vitamin D +8.26 ng/mL at month 12 (95% CI 6.33–10.19; p<0.001)
 - Higher with Balance: vitamin D, B12, iron, ferritin, folate, zinc, copper, A, E, C, B1, B6

New deficiencies over time → FEWER ON BALANCE

- Month 9: 7.9% vs 21.1%
- Month 12: 7.9% vs 23.7%
 - Few events at months 3–6; separation emerged at months 9–12
 - Effect spread across nutrients, not one analyte

Weight and body composition → SAME IN BOTH ARMS

- TWL 12.9% vs 13.0% — no difference
- BMI change MD 0.00 (–0.17 to 0.18); p=0.957
 - Fat mass –9.45 vs –9.58 kg; fat-free mass –2.61 vs –2.55 kg
 - Skeletal muscle mass and body-fat % equivalent

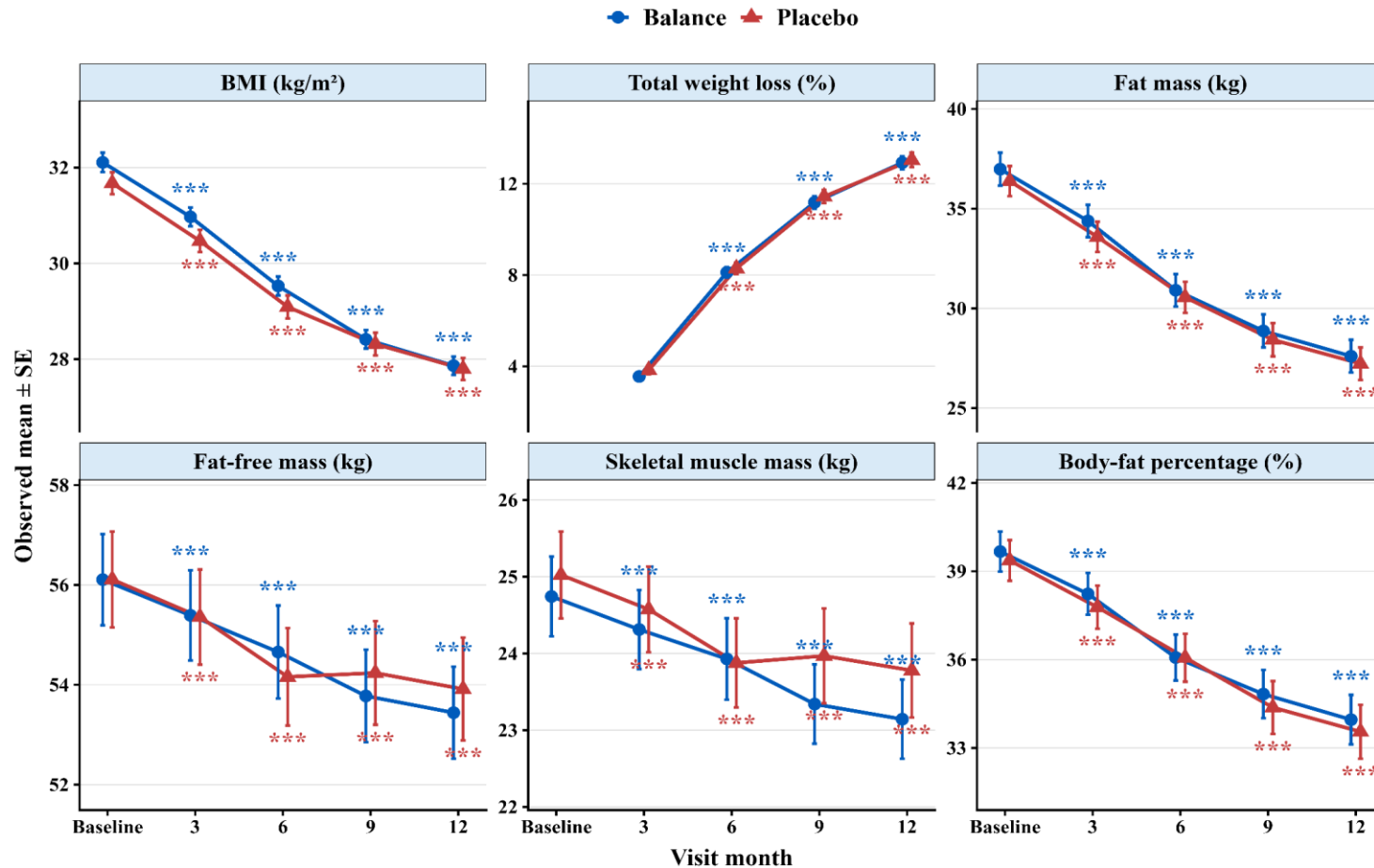
Cardiometabolic and adherence → SAME IN BOTH ARMS

- HbA1c –0.27% in both arms p=0.909
- Compliance 90.9% vs 88.2% p=0.008
 - Systolic BP MD –0.61 mmHg (–1.37 to 0.15); p=0.118
 - Lipids and liver enzymes improved in both arms, no between-group difference

All values are Balance vs placebo — only micronutrient status differed; weight, body composition and cardiometabolic outcomes were equivalent.



Weight-loss efficacy was not affected



* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ for within-group difference from baseline; for total weight loss, month 3 is the reference visit.

12.9%

Balance
TWL at 12 months

13.0%

Placebo
TWL at 12 months

No difference in BMI, fat
mass, fat-free mass, muscle
mass or body-fat %



Take-home message and safety

A daily specialized multivitamin reduced new-onset micronutrient deficiency by ~70% over 12 months — without compromising GLP-1 weight loss or tolerability.

2.6% vs 1.3%

had adverse events

Balance vs placebo — 3 patients in total, all admitted for dehydration

90.9%

of prescribed tablets were taken

Median per patient on Balance (88.2% on placebo)

None

developed vitamin or mineral excess

No hypervitaminosis or mineral overload in either arm

Limitations

- Single centre, 12-month horizon
- BIA body-composition method
- Fixed formulation



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