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Summary

EFFECTS OF EXCLUSIVE PALATABLE ELEMENTAL DIET ON BODY COMPOSITION IN OBESE AND LEAN MICE

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Palatable elemental diet (PED) induced rapid, fat-predominant weight loss in lean and obese mice over 14 days, with muscle preservation in lean mice and modest muscle loss in obese mice, mirroring prior human trial findings.

KEY POINTS

- In obese mice, PED induced marked weight loss (35.4±1.0 to 23.2±2.4 g, p<0.01) with profound reductions in visceral, subcutaneous, and total fat (all p<0.001) and reduced muscle mass (p=0.004).
- In lean mice, PED resulted in reductions in total fat (2461±603 to 1778±930 mm^3, p=0.01) and subcutaneous fat (1294±367 to 892±392 mm^3, p=0.005), while muscle mass was preserved (5149±460 to 5471±503 mm^3, p=0.21).
- Compared to regular chow in lean mice, PED resulted in greater changes in visceral fat (□282 to +379 mm^3, p=0.009) and total fat (□683 to +437 mm^3, p<0.01).
- Locomotor activity and anxiety-associated behavior did not change across any treatment group.
- Weight reductions were predominantly driven by reductions in adipose tissue; together with prior human data, findings support a preferential effect of elemental nutrition on adipose tissue.
- Study limitations include small sample size, short 14-day intervention, male-only mice, and lack of individual caloric intake data.

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