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Safety and Efficacy of a Low-Carbohydrate Diet in Insulin-Treated Type 2 Diabetes: Preliminary Results from a Controlled Study

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Introduction:

Low-carbohydrate diets may improve glycaemic control and reduce insulin requirements in type 2 diabetes mellitus (T2DM), but safety data in insulin-treated patients remain limited. This ongoing study evaluates the short-term safety and efficacy of a low-carbohydrate dietary intervention in adults with T2DM receiving insulin therapy.

Methods:

In this prospective controlled study, participants with T2DM on insulin were assigned to either a low-carbohydrate diet (intervention; target <30 g carbohydrate/day) or usual care (control) for 12 weeks. Interim analysis included 12 participants in the intervention group and 8 in the control group. Outcomes assessed were HbA1c, total daily insulin dose (TDD), anthropometric measures, lipid profile, renal parameters, urine albumin–creatinine ratio, and hypoglycaemic events.

Results (preliminary):

At 12 weeks, the intervention group demonstrated reductions in HbA1c (mean –1.51%) and TDD insulin (mean –32 units), accompanied by decreases in body weight (–3.99 kg), BMI (–1.66 kg/m²), and hip circumference (–2.92 cm). Several participants achieved substantial insulin dose reductions (>50%). Hypoglycaemia was reported by nine participants in the intervention group, occurring mainly during the initial adjustment phase and generally mild in severity; no severe hypoglycaemic events were observed. No statistically significant changes were noted in lipid or renal profiles, or urine albumin–creatinine ratio. In contrast, the control group showed minimal improvements in glycaemic indices and anthropometric measures, with largely unchanged insulin requirements.

Conclusion:

Preliminary findings suggest that a low-carbohydrate diet may safely improve glycaemic control and substantially reduce insulin requirements in selected patients with T2DM when closely supervised. Ongoing recruitment and final analyses will further clarify efficacy, safety, and metabolic effects.