**Metformin slows intestinal glucose absorption in type 2 diabetes, irrespective of the timing of its administration.**

**Aim/s:**

Standard practice is to ingest metformin, the first-line therapy for type 2 diabetes (T2D), with meals. However, in a recent study, we demonstrated that metformin, administered 30 or 60 min before a small intestinal glucose load, reduced the glycaemic excursion more than when given concurrently with glucose (Figure 1A), associated with augmented glucagon-like peptide-1 (GLP-1) secretion. The effects of metformin on postprandial GLP-1 secretion and glucose lowering may in part reflect its inhibition on intestinal glucose absorption. We therefore retrospectively assessed the impact of varying the timing of metformin administration on intestinal glucose absorption in T2D.

**Methods:**

16 participants with metformin-treated T2D (2 female, aged 69.9 $\pm $ 1.9 years, BMI 28.7 $\pm $ 1.0 kg/m2, HbA1c 6.6 $\pm $ 0.1% / 48.2 $\pm $1.6 mmol/mol), were studied in a double-blinded, randomised, placebo-controlled, crossover design. On each study day, participants received metformin 1g via a nasoduodenal catheter at t = -60, -30 or 0 min or saline control, followed by an intraduodenal infusion of 45g glucose + 5g 3-O-methylglucose (3-OMG, a non-metabolised glucose analogue as a marker of intestinal glucose absorption) from t = 0 - 60 min. Serum 3-OMG concentrations were measured at t = 60, 90 and 120 min.

**Results:**

There was a significant treatment effect for metformin to lower serum 3-OMG concentrations (treatment effect: P = 0.012). However, serum 3-OMG concentrations did not differ significantly between the three metformin study days (Figure 1).

**Conclusion:**

Our findings suggest that metformin reduces the rate of intestinal glucose absorption in a manner unrelated to the timing of its administration and that the enhanced postprandial glucose-lowering and GLP-1 release associated with pre-meal metformin administration are unrelated to the rate of glucose absorption in T2D.

