PRE-MEAL CONSUMPTION OF WHEY PROTEIN ENHANCES INTACT AND TOTAL GLUCAGON–LIKE PEPTIDE-1 AND INSULIN POSTPRANDIAL RESPONSES IN TYPE 2 DIABETES

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Recently we reported that Whey protein (Whey) has insulinotropic and glucose lowering effect in type 2 diabetic (T2D) subjects. Whether it is related to a corresponding change of incretin secretion or degradation, however, has not been studied in T2D. We assessed in T2D subjects, the effect of Whey preload 30 min before high glycemic Index (HGI) breakfast (B) on postprandial, early30–min, late 60–120 min and 180min, plasma insulin, glucose, intact–GLP–1, total–GLP–1 and DPP4 plasma activity. In a randomized crossover design 19–T2D(10m), aged 64±5.5 yrs; BMI:26.9±4.6 kg/m2; HbA1c:6.7±0.7%;duration of T2D:7.9±6.0 yrs; consumed on separate days 50 gr Whey+250 ml water or Placebo (P)(250 ml water), followed 30min later by HGI–B. Whey vs P induced significantly higher early insulin secretion (AUC30) 2803 ±250 vs. 1324±150 mIU/ml/min(p0.003). AUC180 in Whey vs P was higher by 51.4±2% for insulin (p0.003); 42±4% for total–GLP–1(p0.001);74.5±3% for intact–GLP–1(p0.001), and reduced by 31±4% for plasma glucose. Glucose–peak in Whey:291±51 vs P:199± 44 mg/dl(p0.001) Total–GLP–1 and intact–GLP–1 responses were strongly and positively associated with AUC180 for insulin response (r=0.82,p 0.0001); whereas negatively associated with AUC180 for glucose (r=0.12,p 0.0001). Coefficient intact–GLP–1/total–GLP–1 as surrogate of non–degraded GLP–1, higher in Whey vs P (r=0.07, p.0001). Conclusion: Whey before HGI–B enhanced prandial intact–GLP–1 and total–GLP–1 secretion in a parallel fashion with the insulinotropic effect. These findings suggest that Whey may improve the impaired function of GLP–1 as a transmitter in the enteroinsular axis and may represent a novel approach for incretin–based therapy, stimulating GLP–1 and prandial insulin release limiting postprandial glycemia in type 2 diabetes.