DIFFERENTIAL MORNING VS. EVENING INSULIN AND GLUCAGON-LIKE PEPTIDE-1 (GLP-1) RESPONSES AFTER IDENTICAL MEAL IN TYPE 2 DIABETIC SUBJECTS

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It was shown in type 2 diabetics (T2D), that high-calorie (HC) breakfast (B) diet with reduced dinner (D), resulted in a significant decrease in HbA1c, and was more beneficial than isocaloric diet with HC-D and reduced B in improving glucose, lipids and hunger scores (HS). Whether it is related to differential glucose, insulin and incretin hormone response to Iso HCB vs HCD is unknown. We assessed in T2D postprandial early 30, late 60-180 and 180min AUC for plasma insulin, glucose, intact and total glucagon–like peptide-1(GLP-1) and HS response after Iso HCB vs HCD. In a randomized crossover design 18-T2D (8 males), aged 57±5.5 yrs;BMI:30.9±4.6 kg/m²; HbA1c:7.7±0.7%, consumed 700 kCal; with % of CH:protein:fat:50:30:20%; in B or in the D. HCB vs HCD induced lower glucose peak: 252±30.2 vs. 295±15.4 mg/dl (p<0.001), and significantly greater AUC30 for early insulin response (almost 2-fold): 2033±139 vs.HCD:1124 ±596 mIU/ml.m (p 0.001). In HCB vs HCD, AUC180 was lower by 14.6±5% for glucose (p<0.001),higher by 22±6% for total-GLP-1(p<0.001), by 24.5±8% for intact-GLP-1(p<0.001) and reduced by 44.2±1% for HS(p < 0.001) AUC30 for total-GLP-1 and intact-GLP-1 were strongly and positively associated with AUC30 for early insulin response (r=0.32, p<0.0001); whereas negatively associated with the postprandial AUC180 for plasma glucose (r= 0.18, p < 0.0001). Conclusions: HCB induced more rapid early insulin response associated with greater total and intact GLP-1, lower glucose excursion and HS. It suggests that HCB with reduced intake at D might be a beneficial alternative for the management of type 2 diabetes.