In Type 2 Diabetes Patients, Insulin Glargine Is Associated with Lower Postprandial Release of Intact Proinsulin Compared with Sulfonylurea Treatment

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Abstract

Objective:
Our objective was to investigate how postprandial processing of intact proinsulin is influenced by different pharmacological strategies in type 2 diabetes mellitus (T2DM).

Materials/Methods:
This exploratory, nonrandomized, cross-sectional study recruited T2DM patients and healthy subjects. Upon recruitment, eligible T2DM patients had been treated for ≥6 months with insulin glargine (GLA) plus metformin (MET), sulfonylureas (SU) plus MET, or dipeptidyl-peptidase-4 inhibitors (DPP-4-I) plus MET. Blood samples were drawn from study participants after an 8 h fast and at regular intervals for up to 5 h after consumption of a standardized meal. Study endpoints included postprandial intact proinsulin and insulin levels and the insulin/proinsulin ratio.

Results:
As expected, postprandial secretion of proinsulin was greater in all T2DM treatment groups than in healthy subjects (p < .01 for all comparisons). Postprandial release of proinsulin was significantly greater in T2DM patients treated with SU plus MET than in those treated with GLA plus MET (p = .003). Treatment with DPP-4-I plus MET was associated with reduced proinsulin secretion versus SU plus MET and an increased insulin/proinsulin ratio versus the other T2DM groups.

Conclusions:
Treatment of T2DM with GLA plus MET or DPP-4-I plus MET was associated with a more physiological postprandial secretion pattern of the β cell compared with those treated with SU plus MET.