Ultra Rapid Lispro (URLi) Demonstrates Similar Time in Target Range to Humalog With the Medtronic MiniMed 670G Hybrid Closed-Loop System

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Background/Introduction:
URLi is a novel ultra rapid formulation of insulin lispro that shows improved postprandial glucose control and similar compatibility with continuous subcutaneous insulin infusion (CSII) vs. Humalog®. In this study URLi was evaluated for the first time in a hybrid closed-loop system using the Medtronic MiniMedTM 670G. Primary objective was to compare URLi to Humalog with respect to the percentage of time with glucose values within target range 70-180 mg/dL (%TIR).

Methods:
This double-blind, crossover study included two 4-week treatment periods with URLi or Humalog. After a 2-week lead-in on Humalog, 42 adults with type 1 diabetes using personal MiniMed 670G pumps were randomized to 1 of the 2 treatment sequences with boluses initiated 0-2 minutes before meals.

Results:
Both treatments achieved good glycemic control with mean TIR >75%. The percentage of time for glucose values in the range of 70-180 mg/dL was 77.0% and 77.8% for URLi and Humalog treatments respectively (p=0.339). The percentage of time in other core continuous glucose monitoring metrics were 0.3% and 0.4% for values <54 mg/dL (p=0.548); 1.5% and 2.2% for values <70 mg/dL (p=0.009); 21.5% and 19.9% for values >180 mg/dL (p=0.088); and 3.8% and 3.2% for values >250 mg/dL (p=0.091). Mean time above and below range met consensus recommendations for both treatments. The percentage of time in Auto Mode was similar between treatments: URLi 92.0%; Humalog 91.4%. Insulin doses and pump settings were generally similar between treatments. There were no serious adverse events or early discontinuations. Overall incidence of treatment-emergent adverse events was similar between treatments.

Conclusion:
URLi demonstrated comparable glycemic control and a similar safety profile to Humalog with the MiniMed 670G system in patients with type 1 diabetes.