Undeniable Need for Ultrafast-Acting Insulin: The Pediatric Perspective

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Abstract

Insulin therapy in youth with type 1 diabetes mellitus (T1DM) poses a special challenge because childhood is an unsteady state with increasing weight, height, and caloric needs, leading to varying insulin requirements. The current rapid-acting insulin analogs are not as fast and short-acting as needed to meet these challenges. This review describes the unique characteristics of insulin action in youth with T1DM based on previously published euglycemic clamp studies. It also explains the rationale behind the need for ultrafast-acting insulins to advance open- and closed-loop insulin therapy for the pediatric population with diabetes. Lastly, it briefly summarizes ongoing and future projects to accelerate insulin action in youth with T1DM.

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Abbreviations: (CL) closed-loop, (DCCT) Diabetes Control and Complications Trial, (PD) pharmacodynamics, (PK) pharmacokinetics, (RAI) rapidacting insulin analog, (T1DM) type 1 diabetes mellitus, (UFI) ultrafast-acting insulin

Keywords: children, closed-loop, diabetes, hyperglycemia, hypoglycemia, insulin analog, ultrafast-acting insulin

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