# Back Stepping Sliding Mode Control of Blood Glucose for Type I Diabetes

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**Abstract :** Diabetes is a growing health problem in worldwide. Especially, the patients with Type 1 diabetes need strict glycemic control because they have deficiency of insulin production. This paper attempts to control blood glucose based on body mathematical body model. The Bergman minimal mathematical model is used to develop the nonlinear controller. A novel back-stepping based sliding mode control (B-SMC) strategy is proposed as a solution that guarantees practical tracking of a desired glucose concentration. In order to show the performance of the proposed design, it is compared with conventional linear and fuzzy controllers which have been done in previous researches. The numerical simulation result shows the advantages of sliding mode back stepping controller design to linear and fuzzy controllers.