

An Algorithm of Regulation of Glucose-Insulin Concentration in the Blood

Authors : B. Selma, S. Chouraqui

Abstract : The pancreas is an elongated organ that extends across the abdomen, below the stomach. In addition, it secretes certain enzymes that aid in food digestion. The pancreas also manufactures hormones responsible for regulating blood glucose levels. In the present paper, we propose a mathematical model to study the homeostasis of glucose and insulin in healthy human, and a simulation of this model, which depicts the physiological events after a meal, will be represented in ordinary humans. The aim of this paper is to design an algorithm which regulates the level of glucose in the blood. The algorithm applied the concept of expert system for performing an algorithm control in the form of an "active" used to prescribe the rate of insulin infusion. By decomposing the system into subsystems, we have developed parametric models of each subsystem by using a forcing function strategy. The results showed a performance of the control system.

Keywords : modeling, algorithm, regulation, glucose-insulin, blood, control system

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