REPRODUCTION OF MODULATION PROCESS OF HUMAN BLOOD GLUCOSE LEVEL THROUGH THE MATHEMATICAL MODELING

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ABSTRACT

In order to maintain the life, the human body supplies glucose, which is an important energy source, to each organ of the human body through the blood, maintaining higher than a certain level. However, when the concentration of glucose in the blood is too high, various harmful actions to the human body appear. Therefore, maintaining the proper level of blood sugar in the human body is indispensable for maintaining vital phenomena. Therefore, numerous studies have been conducted on the process of regulating blood sugar in the human body, and mathematical models to theoretically investigate this phenomenon have also been developed. This study explains the mathematical mechanism that regulates the blood sugar level in the human body, and shows what dynamics it has to efficiently maintain the appropriate level of blood sugar. Particularly in the early stages of diabetes, it explains the action of increasing insulin secretion, which is taken to compensate for the defect in the blood sugar control function caused by insulin resistance of the human body organs. In addition, it suggests the theoretical hypothesis that can explain how to provide information on the onset or progression stage of diabetes in the subject who has the mathematical model for controlling blood sugar with the specific parameter set on the diabetes development pathway.