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Many organisms utilize glucose as their main source of energy. Glucose, a simple carbohydrate, is metabolized from the foods organisms consume or is synthesized within the organism. In healthy individuals, the body is able to regulate the amount of glucose present in the bloodstream. However, people with a condition known as diabetes mellitus are unable to successfully carry out proper glucose metabolism. In previous studies, ethanol, or drinking alcohol, caused hypoglycemia in humans, which is further exacerbated in diabetics. A system of ordinary differential equations was created to include ethanol as a parameter of the blood glucose regulation system. This mathematical model may be utilized in future studies including blood glucose management and alcohol consumption. (Received September 24, 2012)