

Gestational diabetes is one of the most common issues that a pregnant woman encounters that could result in harm to both the woman and child. Due to this issue, the woman's glucose and insulin levels should be carefully monitored throughout her pregnancy to assess the need for prescribed diabetic medication to help regulate those levels. In this research, the objective is to develop a MATLAB computer program of the Oral Minimal Model, which is a model that can be used to estimate a person's insulin sensitivity from an oral glucose tolerance test (OGTT) where plasma glucose and insulin levels are determined from blood samples collected from subjects at seven different time instants of 0, 10, 20, 30, 60, 90, and 120 minutes. As of this moment, the program has been completed, tested and then applied to patient data collected by Dr. Katie Ingram's research team, producing some promising results on estimating their individual glucose effectiveness ( $S_g$ ), insulin sensitivity ( $S_i$ ), and rate constant ( $k_3$ ) characteristics.