



Far East Journal of Mathematical Sciences (FJMS)

© 2013 Pushpa Publishing House, Allahabad, India

Available online at <http://pphmj.com/journals/fjms.htm>

Special Volume 2013, Part ..., Pages ...

(Devoted to articles on Comput. Sci., Info. Sci., Financial Manag. & Biol. Sci.)

MATHEMATICAL MODEL OF THE INTRAVENOUS GLUCOSE TOLERANCE TEST USING MODIFIED MINIMAL MODEL

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Abstract

The modified minimal model of glucose and insulin plasma levels is commonly used to analyse the results of glucose tolerance tests in humans. In this paper, a mathematical model for describing the glucose infusion rate is introduced. The modified minimal model was used to study a few sets of published data including healthy humans and type 2 diabetes. The glucose-insulin system is a dynamic integrated physiological system and generates the real optimized model parameters from the experimental data using the modified minimal model. The averaged R^2 value between measured and calculated plasma concentrations is 0.977, which indicates excellent agreement.

Received: October 26, 2013; Accepted: November 22, 2013

2010 Mathematics Subject Classification: **Kindly provide.**

Keywords and phrases: modified minimal model, intravenous glucose tolerance test, glucose-insulin system.