Dynamically Dimensioned Particle Swarm Optimization

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Abstract

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Introduction

Results

Coagulation is an archetype biochemical network that is highly interconnected and tightly regulated with multiple positive and negative feed back loops. The biochemistry underlying coagulation has been well studies and documented. This makes it an ideal system for mathematical modeling and parameter estimation. Coagulation is regulated by a set of serine proteases also known as coagulation factors and blood platelets. The coagulation factors are generally in an inactive state and are known as zymogens. These zymogens are activated when through certain triggers. These trigger events like injury or trauma or sepsis exposure factors like collagen, tissue factor and von Willebrand factor (vWF) to blood. The exposure of these factors to blood kick-starts a series of convergent cascades that lead to conversion of zymogen prothrombinase to thrombin. Luan et al. modeled coagulation using coupled non-linear ordinary differential equations with 301 reactions and 192 species.

15 # Discussion

Materials and Methods

Formulation and solution of coagulation model equations.

Optimization methods.

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References