

FUZZY LOGIC MODEL OF STARCH HYDROLYSIS BY DIFFERENT TYPES OF ENZYMES ATTACK MECHANISM

Piotr Wojciechowski[♂] & Iwona Grad[♀]

[♂] Institute of Chemical Engineering & Heat Equipment, Wrocław University of Technology
Norwida 4/6, Wrocław 50-373, Poland

[♀] Institute of Organic Chemistry, Biochemistry & Biotechnology, Wrocław University of Technology
Wybrzeże Wyspiańskiego 27, Wrocław 50-370, Poland

A fuzzy logic-based model uses a set of fuzzy if-then rules to capture the functional mapping relationship between a set of input and output variables [1]. In this project we have tried, considering information about kinetics of enzymatic starch degradation, to create general model which can simulate various kinetics mechanisms. Depending on reaction parameters and predefined rules to describe local condition a fuzzy logic algorithm choose one of earlier defined models:

- ✚ Michaelis-Menten kinetics with different types of enzyme inhibition [2],
- ✚ multisubstrate Michaelis-Menten kinetics [3],
- ✚ empirical kinetics model [4],
- ✚ model which discriminates between *types* of glucose unit [5],
- ✚ iteration kinetics model [6],
- ✚ artificial neural networks (not included yet) [7].

A basic scheme of fuzzy logic model was show in Figure 1.

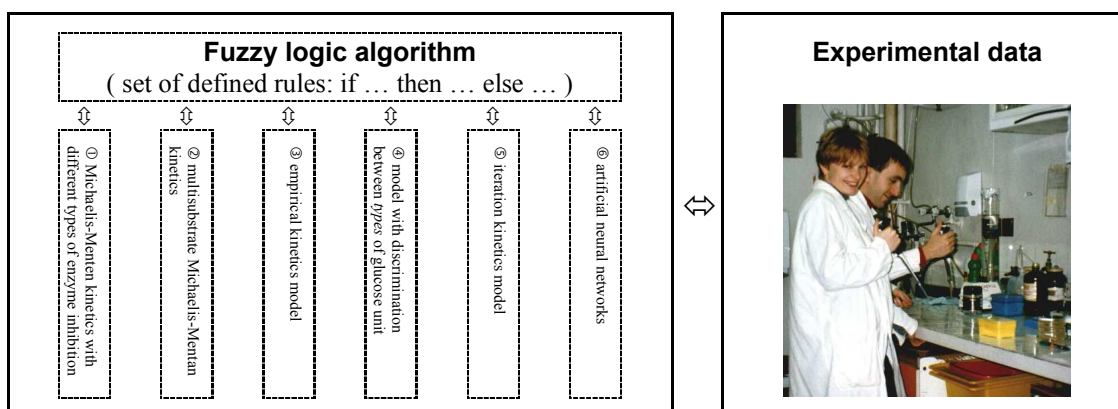


Fig. 1. Basic scheme of fuzzy logic model of enzymatic starch hydrolysis.

A fuzzy logic algorithm was tested on experimental data for α -, β - and glucoamylases. We obtain a smooth approximation with describes kinetics data better that each individual model. For more information please visit the web site on the following Internet address: <http://www.iic.pwr.wroc.pl/~siechu/bio/index.html>

References:

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