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## **SEPARATION OF SUCCINIC ACID FROM FERMENTATION BROTHS. MODELLING AND OPTIMIZATION**

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### **Abstract**

Succinic acid is widely used in different industries, its demand increasing each year. Therefore, efficiently producing it (especially from bio-regenerable sources) is an aspect that researchers try to solve through different methods, one of the approaches consisting in using process models for generating predictions and improving production by process optimization. In this work, a combination of two bio-inspired algorithms represented by Artificial Neural Networks and Clonal Selection was employed for determining optimal models for the separation of succinic acid from fermentation broths. Since these two algorithms cannot be naturally combined, a direct, real-value encoding for the most important model parameters was employed. In order to improve the performance of the general algorithm, a local hybrid search method based on Random Search and Back-Propagation was introduced into the optimization procedure. The results obtained showed that the algorithm improvements are translated into performance improvements.

*Key words:* back-propagation, clonal selection, neural network, random search, succinic acid

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