

Prediksi Aktivitas Inhibitor DPP-IV Sebagai Agen Anti Diabetes Menggunakan Metode *Particle Swarm Optimization-Support Vector Machine*

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Abstract

Diabetes mellitus is a disease caused by an increase in blood sugar levels in some due to impaired insulin production. This disorder can occur due to damage to pancreatic β cells due to factors such as viruses and chemicals. Various studies have been conducted to find drugs that can overcome this disease. One of them is Dipeptidyl Peptidase IV (DPP IV) inhibitors which are known to show potential for the treatment of diabetic patients. In this study, the Quantitative Structure Activity Relationship (QSAR) method is used to predict the activity of DPP IV inhibitors as anti-diabetic. Particle Swarm Optimization (PSO) is used for feature selection and Support Vector Regression (SVR) is used to create prediction models. The researcher improves the performance of the model by adjusting the hyperparameter to get optimal hyperparameter values. From the results of the analysis, the researchers found each RBF, Poly, and Linear models containing 25 descriptors that had good accuracy. From the results tested on descriptors versus MSE which shows the model that produces the right verification. Testing is also carried out on actual versus prediction, actual versus residual and Applicability of Domains which give mixed results from testing.

Keywords: *Dipeptidyl Peptidase IV inhibitors, Particle Swarm Optimization, Quantitative Structure Activity Relationship, Support Vector Regression*
