Abstract

The objective of this research is the analysis of predicting the response for treatment in patients with hepatitis C virus. The Interferon Alfa (IFN) in combination with ribavirin (RBV) is used as a standard therapy for chronic hepatitis C (CHC), it is very expensive and accompanied with great side effects, with that it fails in more than half cases. For the prediction of treatment response, a knowledge discovery framework includes two main phases: pre-processing and data mining was developed. In pre-processing phase, the clean and selection of suitable features from patients' data were done. In data mining phase the selected patients' features were mined using Associative Classification (AC) technique to generate a set of Class Association Rules (CARs). The most suitable rules from the generated CARs were selected to build a classifier, which predicts patients' response for treatment. Using our model, 220 patients treated with IFN plus RBV were analyzed, 92 patients resulted responders and 128 non-responders at the end of treatment and during the follow up. 170 cases had been used to train our intelligent systems and 50 patients had been used to test the model. The experiment results showed that the proposed technique is an effective classification technique with high prediction accuracy reach up to 90%.

References
- Rattanakronkul, N. and K. Waiyamai, "Combining Association Rule Discovery and Data Classification for Protein Structure Prediction", The International Conference on Bio-informatics (INCOP'2002).
- Szymon, W., "Towards prediction of HCV therapy efficiency", Computational and Mathematical Methods in Medicine, 11(2) 2010, 185-199.
- EI-Houby E. M. F., "Mining Protein Structure Class Using One Database Scan", International Journal of the Computer, the Internet and Management (IJCIM), 18(2), 2010, pp 8-16.

Index Terms

Computer Science
Artificial Intelligence

Keywords

Associative classification  Class association rules  hepatitis C virus  interferon  ribavirin