
FAHIMA NEKKA, Université de Montréal

Impact of Drug Intake Variability on Therapeutic Outputs

Variability in drug intake is increasingly recognized as a major source of variability in drug response. This topic, known in human medicine as patient compliance with drugs is an old problem, dating back to Hippocrates. This old interest has produced an overwhelming literature on the subject, mainly from the behavioural aspect and patient managements. However, until recently, the topic has been mainly descriptive and suffered from a lack of real new ideas and breakthroughs. This has been attributed to the absence of reliable measurement techniques, methodological flaws of compliance and lack of a conceptual rigor. With the aim to build a theoretical framework of drug intake variability, we have conceptually formalized compliance in different therapeutic contexts. We have used probabilistic and stochastic approaches to reproduce the main characteristics and attributes of drug-intake patterns and to investigate their responsibility in the pharmacokinetic/pharmacodynamic (PK/PD) variability. Using these approaches, we have shown that inclusion of random drug-intake features can generate a dramatic influence on the PK/PD variability that we properly characterized.

This work is in collaboration with Dr. Jun Li.