Emrin Zitha-Bovens, Peter Maas, Dick Wife, Johan Tijhuis, Qian-Nan Hu, Thomas Kleinöder, Johann Gasteiger.

Abstract

The technological evolution of the 1990s in both combinatorial chemistry and high-throughput screening created the demand for rapid access to the compound deck to support the screening process. The common strategy within the pharmaceutical industry is to store the screening library in DMSO solution. Several studies have shown that a percentage of these compounds decompose in solution, varying from a few percent of the total to a substantial part of the library. In the COMDECOM (COMpound DECOMposition) project, the compound stability of screening compounds in DMSO solution is monitored in an accelerated thermal, hydrolytic, and oxidative decomposition program. A large database with stability data is collected, and from this database, a predictive model is being developed. The aim of this program is to build an algorithm that can flag compounds that are likely to decompose—information that is considered to be of utmost importance (e.g., in the compound acquisition process and when evaluation screening results of library compounds, as well as in the determination of optimal storage conditions).