

Advanced Analytical Technology as Applied to Natural Products for Drug Discovery

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Natural product chemistry has traditionally been a long and time-consuming process for drug discovery research. From extraction, isolation and purification to structure elucidation of biologically active compounds, Sequoia Sciences has created a patented extraction and isolation method to create purified natural product fractions that fit into HTS screening platforms. Utilizing the CapNMR probe and ACD database and structure elucidation software, Sequoia has pioneered structure elucidation on mass limited or microgram quantities of purified natural product compounds and published numerous papers on its now-patented process.

Sequoia has accelerated the discovery of active and novel compounds from plant sources. Sequoia's process has also allowed it to produce a more focused screening library based on selective plant species that may be either underrepresented due to insufficient material or that may produce unique compounds necessary for their survival. In this regard, our strategy has allowed us to analyze several species of Orchids and most recently, Nepenthes or the carnivorous tropical pitcher plant.

Carnivorous plants growing in nutrient-poor soils have special organs used to capture insects, digesting them in pitcher fluid in order to supplement their nitrogen uptake. It was our theory that these plants must produce selective antibacterial compounds necessary for survival in a decomposing environment within the pitcher shaped trap. From the Sarraceniaceae family, we have isolated a series of novel iridoids that have demonstrated to be potent inhibitors of bacterial biofilm growth. This series of iridoids have limited published literature available and represent great potential for our internal bacterial biofilm drug discovery program.