Research Article

Development of a high-speed, multiplexed sample-delivery instrument for LC–MS/MS bioanalysis

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Background: The number of new chemical entities and types of in vitro and in vivo samples that require bioanalysis in drug discovery is large and diverse. In addition, method development time is limited as data turnaround is the highest priority. These circumstances require that a well-defined set of bioanalysis options be available in short timeframes to triage samples for analysis. Method: The Apricot Designs Dual Arm (ADDA) instrument is an LC–MS/MS sample delivery system that features a flexible hardware design coupled with software automation to enhance throughput in LC–MS/MS bioanalysis drug discovery. The instrument can perform high-throughput LC–MS/MS (8–10 s/sample) for screening and in vitro bioanalysis, as well as multiplexed LC for traditional gradient or isocratic LC approaches. The instrument control software is designed to integrate with DiscoveryQuant™ software (AB Sciex) and a global database of MS/MS conditions. Conclusion: Development of the sample delivery platform and its application in high-throughput and gradient LC will be described.