CHROMSYS
Smart Lab Solutions

Application Note

Determination of Cannabis Metabolite (THC-COOH) Using CHROMSYS Evolution GC-MS/MS

The CHROMSYS Evolution GC-MS/MS utilizes an Agilent 5973 or 5975 MSD as a base unit, as well as a new collision chamber and Q3 mass filter. In this application note, we will discuss the determination of the active compound THC-COOH from a human hair sample. This procedure has previously been described in various publications. It permits the detection of cannabis use within the last 30 days of its consumption.
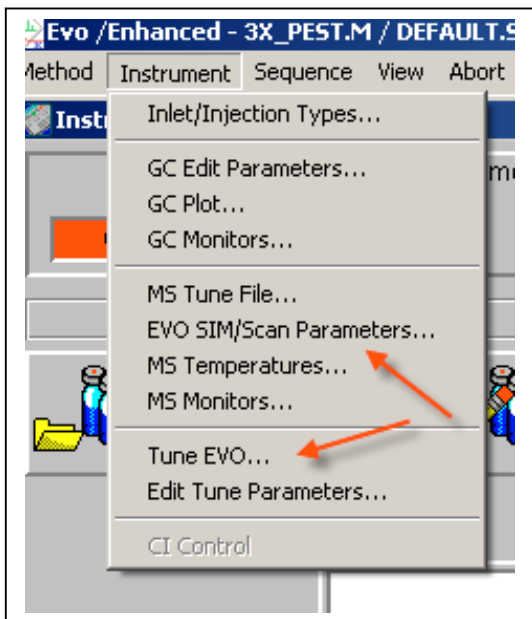

CHROMSYS Evolution is controlled via Chemstation. Two additional windows for the control of the two additional quads are available. First there is the tune window, which allows for the use of an automated tune using the PFTBA valve from the Agilent system. The user also has the option to manually choose a value for each quad individually.

There also is a window for the Evo SIM/Scan parameters in which the user can choose the parent/daughter ions as well as the collision energy for each compound that needs to be analyzed.
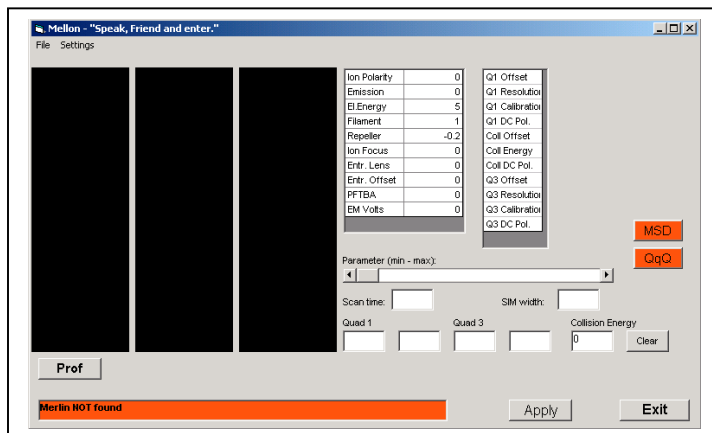
Using the example of THC-COOH, a parent ion of 371 and a daughter ion of 289 using a collision energy of 8 were chosen. A second parent ion of 473 and daughter ion of 355 were selected as well. The concentration of the analytes was 12.5ng.

At the same time, d3-11-OH-THC (374 → 292 & 389 → 374 at 17.6min), 11-OH-THC (371 →289 & 386 → 371 at 17.7min) and d3-THC-COOH (374 → 292 & 476 → 358 at 20.6min) were measured.
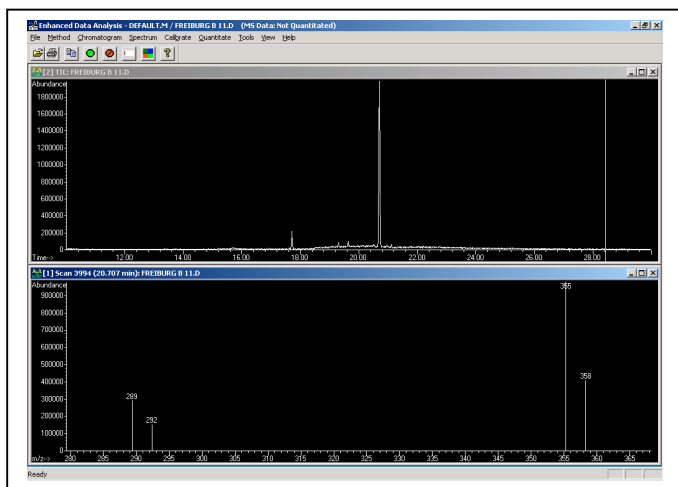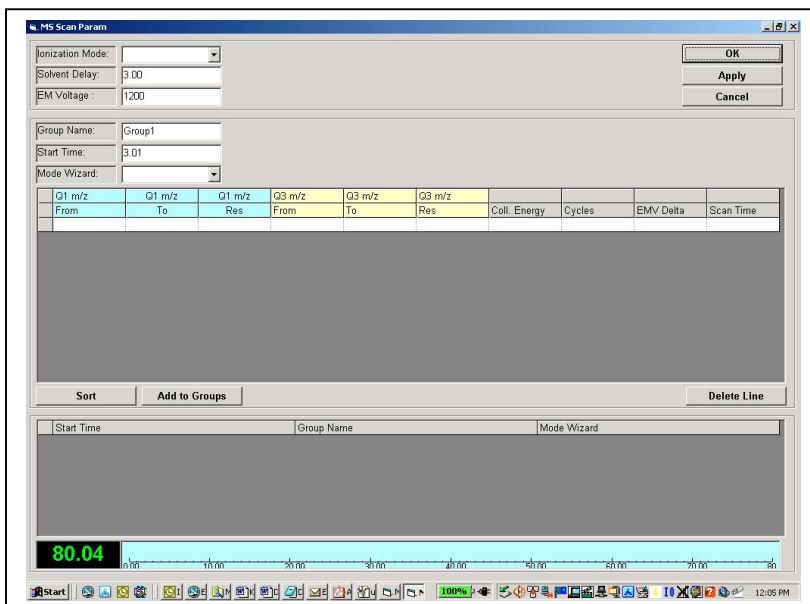
Data analysis was performed in Chemstation. The result showed the four SIM lines of the daughter ions at 20.7 min. A separate window (not shown in screenshot) showed the parent ion of each daughter ion.

The second peak at 17.7min (11-OH-THC & d3-11-OH-THC) showed the daughter ions of 289, 292, 371, 374.
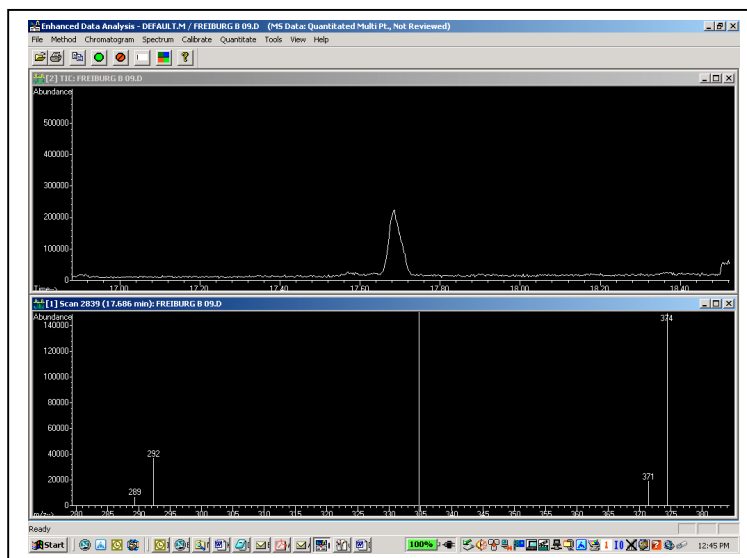
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