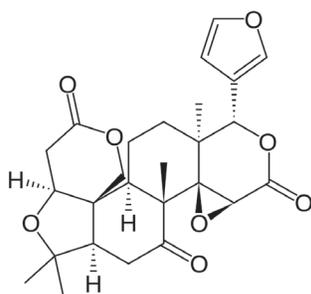
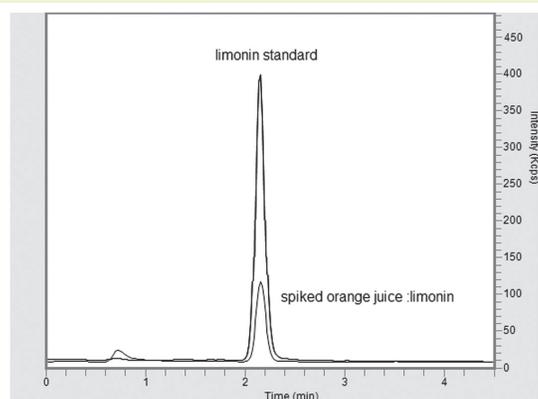


Limonin in Orange Juice (LC-MS)

Separation from matrix peaks with reproducible results



Method Conditions

Column: Cogent Bidentate C18™, 4µm, 100Å

Catalog No.: 40018-15P-2

Dimensions: 2.1 x 150 mm

Solvents: 50% A: DI H₂O / 0.1% formic acid
50% B: Acetonitrile / 0.1% formic acid

Injection vol.: 1 microL

Flow rate: 0.5mL/min

Detection: ESI - POS - PerkinElmer, Flexar SQ 300 mass spectrometer

Temperature: 25°C

Samples: **Standard:** 5 ppm of limonin in 20% DI H₂O / 0.1% formic acid / 40% acetonitrile / 40% methanol. **Spiked orange juice preparation:** Orange juice was spiked with 2.5 ppm limonin, filtered, and injected.

Peaks: 1. Limonin standard, 471.2 m/z [M+H]⁺
2. Spiked orange juice: limonin, 471.2

t₀: 1.1 min

Discussion

Analysis of limonin in spiked orange juice was performed using a simple isocratic method, the Cogent Bidentate C18 column, and MS detection. Analysis at 471.2 m/z allowed for detection of only the limonin peak without interference of the juice matrix. When the filtered unspiked orange juice was injected, a small peak for limonin was also detected (data not shown). Based on the spiked sample, the concentration of limonin in the orange juice was determined to be 0.5 ppm. The method can be used in the monitoring of the production of orange juice.

Note: Limonin is a bitter compound which may negatively affect juice quality. The compound is found in the seeds and membrane tissue of the fruit. It is very important for groves to determine the level of limonin in juice so the correct recovery settings for the juice production can be set. The level of limonin can change dramatically from season to season. It also depends on the fruit size. The analysis of limonin is crucial in production of high quality non bitter fruit juices.