Monitoring the effects of resveratrol-enhanced de-alcoholised red wine consumption by LC-QTOF-MS

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Background

○ Resveratrol, a phenolic compound in red wine, is positively associated with human health.
○ It can be absorbed into the body from wine, supplement tablets or certain foods.
○ The aim was to develop an assay using high resolution mass spectrometry (LC-QTOF-MS) to accurately quantitate resveratrol and its phase-II metabolites and demonstrate its bioavailability in plasma after the consumption of a resveratrol-enhanced de-alcoholised red wine.

Plasma assay

Analytes:
A Trans-resveratrol
B Trans-resveratrol-4’-glucuronide
C Trans-resveratrol-3-glucuronide
D Trans-resveratrol-4’-sulfate
E Trans-resveratrol-3-sulfate

Linear Calibration Range: 1 – 1000 µg/L

Results

○ High precision for all analytes with relative standard deviation (RSD) below 0.2 (N=7); reproducibility tested at 25 µg/L and 500 µg/L calibration levels.
○ Resveratrol metabolites (B-E) were detected in human plasma at 30 minutes for 89% of subjects tested.

Conclusion

○ After consumption of resveratrol-enhanced de-alcoholised red wine, rapid uptake and metabolism of resveratrol was established.
○ High levels of resveratrol metabolites were detected in human plasma after consumption of a resveratrol-enhanced de-alcoholised red wine.