Characterization of positional and configurational tropane alkaloid isomers by combining GC with NPD, MS and FTIR

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A purified stem bark extract from Schizanthus grahamii was analyzed by combining capillary gas chromatography with a selective nitrogen phosphorus detector, mass spectrometry and Fourier transform infrared spectroscopy. Several positional and configurational tropane isomers were detected and their structural elucidation was tentatively determined based on mass spectra and confirmed by vapor phase infrared spectra. Electron impact mass spectra of the isomeric alkaloids were virtually superimposable, whereas the corresponding infrared spectra differed markedly. Retention indices were established under isothermal and temperature program conditions for further peak assignment and identification. In order to point out possible artifacts in the hot and surface-active injection port, different sample introduction techniques were evaluated, namely split, splitless and on-column injections.