

OW3 Forensic studies of the metabolome of *Ricinus communis* for cultivar determination

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Cultivar determinations have been made through metabolome analysis and chemometrics.

The castor bean plant *R. communis* is a widely spread noxious weed that gained popularity in Australia as a garden ornamental. It is also the source of castor oil and the highly toxic protein ricin [1], which is a listed schedule 1 warfare agent [2]. Considering this, forensic agencies are interested in analytical techniques that are able to determine both cultivar and geographic origin of location of a seed, and more importantly, an extract of a seed of *R. communis*. It is well established that through studying minor perturbations in the metabolite population (metabolomics), conclusions can be made regarding cultivar and origin of location of plant extracts [3-6]. We have been studying the metabolome of *R. communis* using HPLC-UV-MS, and analysing the generated data using chemometrics (Principle Component Analysis, or PCA) to assess the applicability of using this methodology for cultivar determination, and ultimately, geographic origin of location.

This presentation will discuss in detail the results obtained from the analysis of the metabolome of 25 extracts of local and overseas specimens of *R. communis* via HPLC-UV-MS. Discussed is a new method of data analysis for the HPLC-UV spectra, and the identified peaks/bins that are responsible for the differences in extracts of *R. communis*.

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