

## Metabolomics and *in vitro* cytotoxicity of extracts obtained from a desert plant and its soil

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The use of metabolomics in phytochemical research and drug discovery is becoming more widespread and has been particularly useful for studying changes in biological systems. The metabolomics approach can also be a powerful forensic tool to characterize environments by developing chemical fingerprints for a given environment and detecting environmental changes that are ecologically relevant. This study comparatively evaluates the metabolomics and *in vitro* cytotoxicity (MDA-MB231 breast cancer cells) of aqueous extracts obtained from an arid desert shrub (*Tetraena qatarensis*) and the soil surrounding it (rhizosphere and bulk soil). Metabolites present in extracts were separated and characterized using UHPLC coupled to a quadrupole time-of-flight mass spectrometer (Q-ToF-MS). *In vitro* cytotoxicity was carried out using MTT assays. Preliminary analysis of metabolomic profiles suggest that the plant extract and its soil are remarkably similar and appear well-clustered using principal component analysis. The most abundant secondary metabolites detected in both plant and soil extracts were oleamide, hispidulin and scutellarein-7-glucuronide. Interestingly, only the soil extract exhibited *in vitro* cytotoxicity (LD<sub>50</sub>=4.57 µg/mL) suggesting the presence of toxins in the soil extract that are not directly of plant origin. Results from this study also suggest that a plant and its soil have a similar metabolomics fingerprint which maybe unique to each plant-soil environment.

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