

## Screening plants for bioactive natural products, using ecological chemistry observations

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**Background and Aims:** There are several approaches to select a plant for phytochemical research. The three main approaches for the plant's extracts selection include: 1) Bioassay-guided fractionation and purification, 2) Spectroscopy-guided (NMR and MS) purifications of plant extracts and 3) Chemical reaction of natural products (NP) with specific reagents in vitro or on TLC plates to detect a specific class of NP. Screening of plants for their biologically active NPs, based on ecological chemistry observations is a relatively new approach in phytochemical investigation.

**Methods:** Plants derive NPs to defend themselves against herbivore's attack, micro-organism's contamination and also synthesize allelochemicals to inhibit the growth of other competing plants. Chemical ecology studies the interactions between plants and their biotic and abiotic components of their environment, mediated by NPs. I have used the ecological observation to select some plants for screening antioxidant, anti-microbial and cytotoxic NPs.

**Results:** The plants collected from deserts under harsh ecological conditions may be expected to produce antioxidant polyphenolics. Since the roots of plants are exposed to a blend of soil microbes, they may be expected to synthesize antimicrobial metabolites and finally toxic plants with milky latexes may be chosen for isolation of anti-tumour NPs.

**Conclusions:** In this paper, I will describe isolation and structural elucidation of biologically active natural products, extracted from different terrestrial plants, based on the chemical-ecology observations on the source plant.

**Keywords:** Chemical ecology; Natural products, Antioxidants, Antimicrobials, Cytotoxic