

## **SUPPORTING INFORMATION**

### **Selection and Characterization of Botanical Natural Products for Research Studies: A NaPDI Center Recommended Approach**

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**Supplemental Table 1.** Glossary to facilitate communication between different scientific disciplines. The anticipated target audience for this Recommended Approach is analytical and natural product chemists; this glossary provides terms for researchers from other scientific disciplines.

| <b>Term</b>                                     | <b>Definition</b>   |
|---|---|
| Authentic                                       | An authentic botanical specimen is free of contamination and is of known identity, i.e. genus and species correctly assigned, plant part used is correct, no adulteration.  |
| Chemotaxonomy                                   | A method of taxonomic classification based on comparisons of the presence of certain constituents amongst organisms   |
| Clinical study                                  | A research study involving human volunteers (also called participants) that is intended to add to medical knowledge. There are two types of clinical studies: interventional studies (also called clinical trials) and observational studies. <sup>196</sup>  |
| In vitro studies                                | Laboratory experiments using established human-derived in vitro systems to understand mechanisms underlying biological effects  |
| Liquid chromatography-mass spectrometry (LC-MS) | Techniques used to separate mixtures using a solid (stationary phase) in contact with a moving liquid (mobile phase). Components of the mixture are separated based on their different affinities for the stationary phase relative to that of the solvent.   |
| Metabolite                                      | A small molecule that is formed by metabolism or is necessary for metabolism. For the purpose of this review we use the term metabolite to refer to the small molecules endogenously produced by a biological organism (i.e. a plant). Products generated by metabolism of xenobiotics (e.g., conventional drugs) are also referred to as metabolites.                                    |
| Metabolite profile                              | Series of metabolites detected in a given biological sample.  |
| Metabolome                                      | All metabolites present within a biological sample. Metabolomics studies seek to measure as much of the metabolome as possible, but a measurement of the complete metabolome is never achieved.   |
| Metabolomics                                    | Scientific studies that involve measurement of the array of small molecules present in a biological sample.   |
| Natural Products                                | Substances produced by a variety of naturally derived sources, including marine organisms, bacteria, fungi, and plants. The term can refer both to the complex mixture of molecules in raw or partially refined material, or to single isolated compounds. For the purpose of this review, the term “botanical natural product” is used to refer to complex mixtures derived from plants. |
| Plant Secondary Metabolite                      | Small organic molecules produced by plants but not involved in primary functions such as growth, development or reproduction. Many of these compounds serve the purpose of communication, attracting pollinators, or defending against predators and as such tend to have biological activity in humans and non-human animals.  |
| Small Molecule                                  | An organic molecule of low molecular weight that is often involved in regulating biological functions.  |
| Standardization                                 | The process of ensuring that a complex product (i.e. botanical natural  |

product) contains a specified amount of a specific compound. For example, a product prepared from the botanical goldenseal (*Hydrastis canadensis*) may be *standardized* to contain a specified amount of the alkaloid berberine.

Tincture

An alcoholic extract of plant or animal material

Tea

A (usually hot) extraction made by infusing the dried, crushed plant leaves in boiling water