

The Ingredient Battleground

SERIES



→ **Company Name:**
Bio-Botanica



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BOTANICALS

1. How do you test your botanical ingredients?

The therapeutic value of a plant extract lies in its “holistic balance” of components, which Bio-Botanica® captures using our pioneering Biochelated® extraction technique. We now employ the same holistic principles to our “holistically balanced® botanical authentication.” Traditionally, phytochemical authentication involves the analysis of one or a few components. Our innovative “holistic authentication™” expands upon tradition to capture the entire phytochemical spectrum of a plant. We obtain a botanical fingerprint using state of the art UPLC/MS-MS along with other proprietary analytical techniques. The data is analyzed using advanced chemometric approaches, including Principal Component Analysis (PCA), which can detect minor deviations from the natural balance. This results in a botanical product that is as close to nature as possible. The advantages of the holistic balance approach to botanical authentication are numerous and include: detection of botanical adulterants; analysis of marker compounds; pesticide monitoring; detection of contaminants from agriculture, harvesting, shipping and processing; identification of microbial contamination; detection of degradation; and heavy metal analysis.

2. How do you ensure your test methods are validated to reveal safety, identity and potency?

The use of high performance liquid chromatography (HPLC) with ultra violet (UV) detection has allowed analysts to identify some of the botanical markers but does not provide full characterization. Bio-Botanica sought to implement a more advanced analytical technology. Bio-Botanica's Department of Pharmacognosy implemented an analytical solution comprised of the Waters® ACQUITY UPLC® H-Class System with Xevo TQD mass spectrometer. The ACQUITY UPLC H-Class System provides the flexibility of a quaternary-based HPLC with the performance advantages of UPLC.® H-Class enables users to continue running existing HPLC methods or transition to UPLC separations using integrated system tools and column kits that simplify migration. We now routinely use the UPLC/MS/MS to support a wide variety of analytical testing needs including those for product safety, R&D, final product QC and various customer requests.

3. How do you help your finished product customers in regard to testing their products?

With the addition of the Waters ACQUITY UPLC H-Class System and Xevo TQD mass spectrometer to Bio-Botanica's product commercialization process, the company has noted a number of business benefits impacting at both the laboratory and enterprise level, including:

- **Innovation and Brand:** The UPLC/MS/MS system represents a unique technological capability within the market sector, allowing Bio-Botanica to strengthen its position as an organization at the leading edge of botanical product development.
- **Customer Experience :** More rapid run times afforded by the system enable the acceleration of product shipments helping to maintain a high level of customer satisfaction.
- **Label Claim Confirmation:** UPLC/MS/MS is now used in support of Bio-Botanica's QC group. The technology helps ensure final product composition information is accurate .
- **Sample Throughput:** Moving analyses from traditional HPLC separations to UPLC has resulted in an approximately 75% decrease in run times.
- **Contaminant Detection:** Product safety is paramount to us. The adoption of UPLC/MS/MS has allowed for the development of in-house methods for the trace level detection of pesticides in plant extract samples.
- **Compound Identification:** To support R&D efforts, UPLC/MS/MS is used to detect novel compounds that may have unique medicinal or cosmetics applications.
- **Process Monitoring:** Along with other technologies the new system is used to ensure in-process product is within desired specifications, mitigating potential risks associated with producing an out-of-spec batch.

4. Is there anything else you'd like to add?

At Bio-Botanica®, we are committed to the good earth and all its fruitful gifts as a natural products extraction company. Family owned and founded in 1972 and located in the United States, over the past 43 years we have kept the same standards of unexcelled quality and customer satisfaction with a proven track record of on-time delivery of technologically advanced botanical extracts.

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