Advanced Pressurized Liquid Extraction:

Efficient and Expandable Solutions for Natural Product Extraction

Pressurized Liquid Extraction (PLE) is an advanced technique designed to extract bioactive compounds from natural products, particularly plants, using high pressure and temperature. This innovative method enables the extraction of a wide range of compounds with less solvent and faster extraction times compared to traditional methods like Soxhlet extraction, making it an environmentally friendly solution. PLE is especially effective in extracting compounds such as antioxidants, phenolic compounds, and carotenoids from plant materials, supporting the growing demand for sustainable extraction processes.

Key Advantages of PLE:

1. HIGH PRESSURE AND TEMPERATURE EXTRACTION

- **Enhanced Extraction Efficiency:** PLE operates at elevated temperatures and pressures, significantly improving solvent penetration into plant tissues and allowing for the efficient dissolution of target compounds.

2. SOLVENT SELECTION FLEXIBILITY

- **Adaptability:** With PLE, different solvents such as water, methanol, ethanol, or custom mixtures of polar and non-polar solvents can be used, providing optimal conditions for extracting a wide variety of bioactive compounds.

3. AUTOMATED PROCESS

- **Consistency and Throughput:** PLE systems are automated, ensuring consistent extraction conditions, reduced manual input, and improved sample throughput, making them ideal for high-volume applications

4. MODULARITY AND EXPANSION

- **Scalable Solutions:** The FMS PLE system is modular, allowing users to start with a cost-effective single-sample system. As the application needs grow, users can easily expand the system to handle 2, 3, or even 8 samples, ensuring flexibility and scalability. This modular design enables companies to invest gradually and expand as their extraction demands increase, providing both cost efficiency and long-term versatility.

5. ONE-STEP EXTRACTION AND CONCENTRATION

- **Direct Integration with SuperVap:** The PLE system interfaces directly with the FMS SuperVap evaporator, allowing for the efficient evaporation of solvents post-extraction. This one-step process streamlines extraction and concentration, enabling the production of pure, concentrated natural products in a single workflow. This integration reduces handling time and ensures that extracts are ready for further applications without the need for additional equipment.

Advantages Over Traditional Methods:

FASTER EXTRACTIONS:

• **Problem: Conventional extraction methods can be slow, often requiring hours or even days to process samples.**

• **PLE Solution:** With high pressure and temperature, PLE reduces extraction times to minutes, drastically increasing productivity for laboratories or production facilities handling large volumes of natural products.

REDUCED SOLVENT USAGE:

• **Problem:** Traditional methods typically use large volumes of organic solvents, which can be costly and harmful to the environment.

• **PLE Solution:** PLE significantly reduces solvent consumption, offering a "greener" and more cost-efficient extraction method. This benefit aligns with the increasing focus on sustainable and environmentally friendly processing techniques in the natural products industry.

GREATER EXTRACTION EFFICIENCY:

• **Consistency and Throughput:** PLE systems are automated, ensuring consistent extraction conditions, reduced manual input, and improved sample throughput, making them ideal for high-volume applications.

• **PLE Solution:** PLE's ability to operate under high pressure and temperature results in more complete and efficient extraction, making it ideal for industries that require a broad spectrum of compounds, such as nutraceuticals, pharmaceuticals, and cosmetics.

Applications of PLE in Natural Product Extraction:

• Plant Phenolics: Extraction of antioxidants like flavonoids and phenolic acids from fruits, vegetables, and herbs.

• Carotenoids: Efficient extraction of carotenoids from algae and plant sources, used widely in cosmetics and nutritional supplements.

• Terpenes: Extraction of essential oils and terpenes from plants for use in aromatherapy, cosmetics, and food supplements.

• Phytochemicals: Extraction of bioactive compounds with pharmaceutical potential, making PLE a valuable tool for natural product-based research and development.

Why Choose FMS's PLE System?

• Fast and Efficient: PLE reduces extraction times from hours or days to just minutes.

• Solvent Efficiency: Significantly reduces the amount of solvent required, saving costs and minimizing environmental impact.

• Modular and Expandable: Start with a single-sample system and expand to 2, 3, or up to 8 samples as your application needs grow, offering long-term scalability.

• One-Step Extraction and Concentration: With the direct integration to the FMS SuperVap evaporator, you can seamlessly extract and concentrate natural products in one efficient workflow, producing pure, ready-to-use extracts.

• Precision Control: Programmable conditions ensure reproducibility and high-quality extractions, essential for scientific and industrial applications.

Contact Us Today!

For more information on how PLE can enhance your natural product extractions:

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