Quantitative Analysis of Short-Chain Fatty Acids by Gas Chromatography

Short-chain fatty acids (SCFA)—the microbial-produced metabolites important for gastrointestinal (GI) immunity and epithelial barrier maintenance. A variety of short-chain fatty acid concentrations can be quantified by gas chromatography (GC) in combination with other techniques. Creative Proteomics offers a state-of-the-art gas separation platform for the identification and quantification of a wide range of volatile and/or semi-volatile organic compounds.

Chromatography Technology

Quantitative analysis by gas chromatography

Short-chain fatty acids in organisms play diversified physiological roles in various cells and molecular systems, such as affecting immune regulation, inhibiting the production of anti-inflammatory factors, blocking tumor cell proliferation, and controlling proto-oncogene expression. A variety of short chain fatty acid concentrations can be quantified by gas chromatography (GC) in combination with other techniques. Creative Proteomics offers a state-of-the-art gas separation platform for the identification and quantification of a wide range of volatile and/or semi-volatile organic compounds.

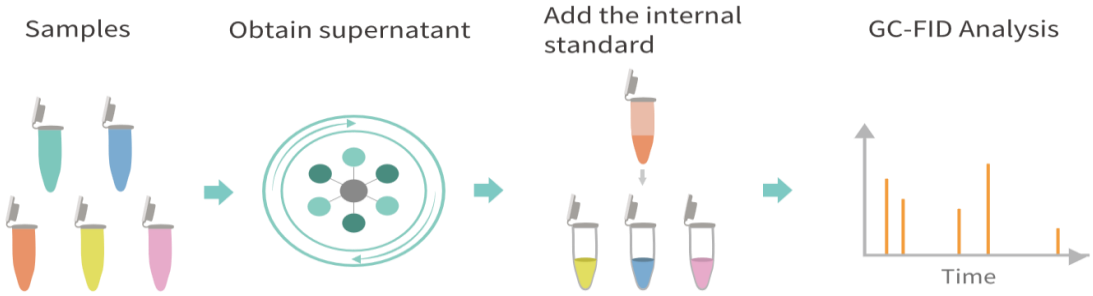
Features

- A Finnigan TRACE DSQ GC-MS system with Electron Ionization (EI) and Chemical Ionization (CI) capability, allowing for identification of unknown compounds down to below part-per-billion levels.
- Experts at Creative Proteomics's extensive experience with powerful mass spectrum database available to identify/quantify a series of compounds as well as many unique or rare compounds

We are capable of:

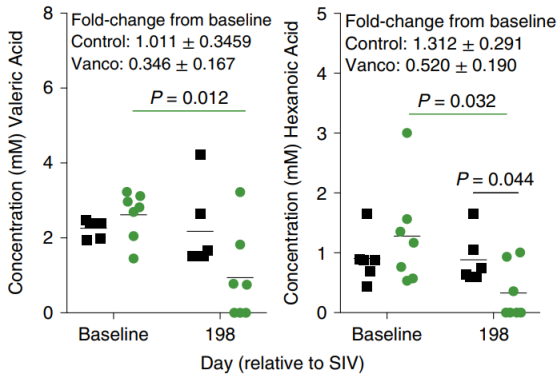
- Air Monitoring Samples
- Clinical Samples
- Colors Samples
- Environmental Samples
- Food & Beverage Samples
- Forensic and Veterinary Samples
- Gas Calibration Samples
- Gasoline, Diesel, & Petroleum Samples
- Life Sciences Samples
- Pharmaceutical Samples
- Polymer Samples
- Personal Care and Cosmetic Samples

ASSAY OVERVIEW



Fecal pellets were homogenized in 17% (wt/wt) water suspension, and titrated to pH 2.0 using 5M HCl. Fecal debris were pelleted and removed by centrifugation. The remaining supernatant was spiked with internal standard 2-Ethylbutyric acid. Samples were injected into the GC flame ionization detector and calibrated against a cocktail of standardized SCFAs—sodium propionate and acetic, butyric, isobutyric, valeric, isovaleric, hexanoic, and heptanoic acids.

DATA OVERVIEW



Short-chain fatty acids (SCFA)—microbial-produced metabolites important for gastrointestinal (GI) immunity and epithelial barrier maintenance—were perturbed in Vanco monkeys, with significant disruptions from baseline observed for fecal valeric and hexanoic acids at d198 p.i.

WHAT WE DO

Analytical services at Creative Proteomics cover Gas Chromatography (GC), Liquid Chromatography (LC), High Performance Liquid Chromatography (HPLC), Mass Spectrometry (MS), GC-MS, LC-MS, HPLC-MS, and *et al.*, analytical instrumentation and expertise for clients' testing and research projects.

Contact Us
www.creative-proteomics.com

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