

Compositional Analysis of Foods, Extracts, Fermentation Products

Unlocking the Potential of Complex Mixtures

Foods, extracts, and fermentation products contain various metabolites, from small chain fatty acids to complex lipids and polyphenols. Understanding their complexity and synergistic actions is crucial for advancing product development, marketing, investments, and commercialization.

HMT Solutions

A Comprehensive 3-Tier Approach

At Human Metabolome Technologies (HMT), we offer a 3-tier solution for optimizing the analysis of different classes of metabolites (polar, lipid, complex lipids). Our advanced options provide deep compositional analysis and enable the discovery of new metabolites.

1. OMEGA Scan:

- Technique: Untargeted capillary electrophoresis mass spectrometry.
- Focus: High-resolution analysis of polar metabolites (e.g., short chain fatty acids, mono amines, water-soluble vitamins, oxidized fatty acids).
- Output: Over 1,000 polar metabolites covering 6 orders of magnitude.

2. LC-OMEGA Scan:

- Technique: Untargeted LCMS.
- Focus: Lipophilic metabolites (e.g., long chain and very long chain fatty acids, conjugated bile acids, polyphenols).
- Output: Approximately 500 lipid species.

3. MSCAN:

- Technique: Targeted LCMS.
- Focus: 400 lipid metabolites (e.g., OMEGA 3, OMEGA 6, OMEGA 9 fatty acids, oxylipins, phospholipids).
- Output: 150 to 200 targeted lipids.

Data Interpretation

Translating Analysis into Actionable Insights

HMT provides comprehensive interpretation of compositional analysis data, associating metabolites with different pathways, activities, physical properties, and biological impacts.

1. Bioavailability:

- Relative abundance helps identify the most bioavailable metabolites.
- Consideration of half-life and blood-brain barrier permeability for health benefits.

2. Taste:

- Extensive library of metabolites linked to taste profiles (e.g., Umami, Kokumi, Starchy, Sweet).
- Major metabolites identified for taste enhancement in food products.

3. Chemical Pathways:

- Analysis of metabolite abundance influenced by source biology (fungi, plant) and processing methods (fermentation).
- Understanding chemical pathways aids in managing food development.

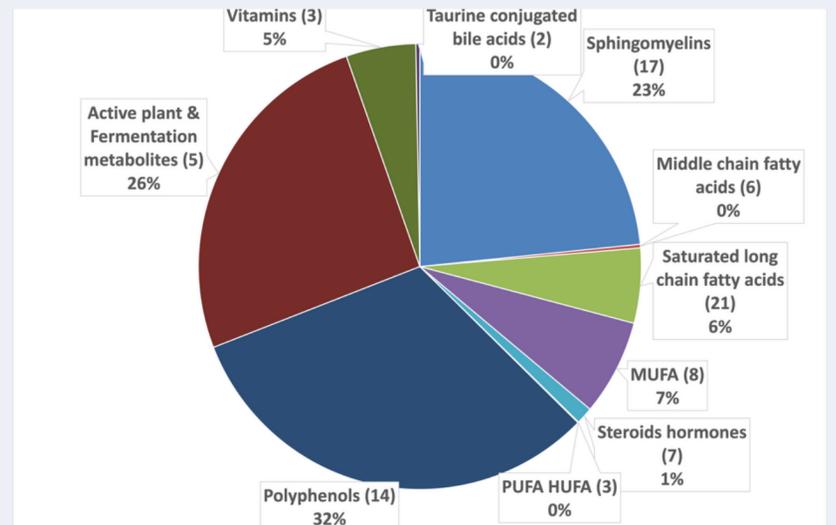
4. Biological Pathways:

- Interaction of metabolites with the gut microbiome, liver, blood-brain barrier, and more.
- Insights into health benefits, including chelation of heavy metals, anti-inflammatory effects, and neuroprotection.

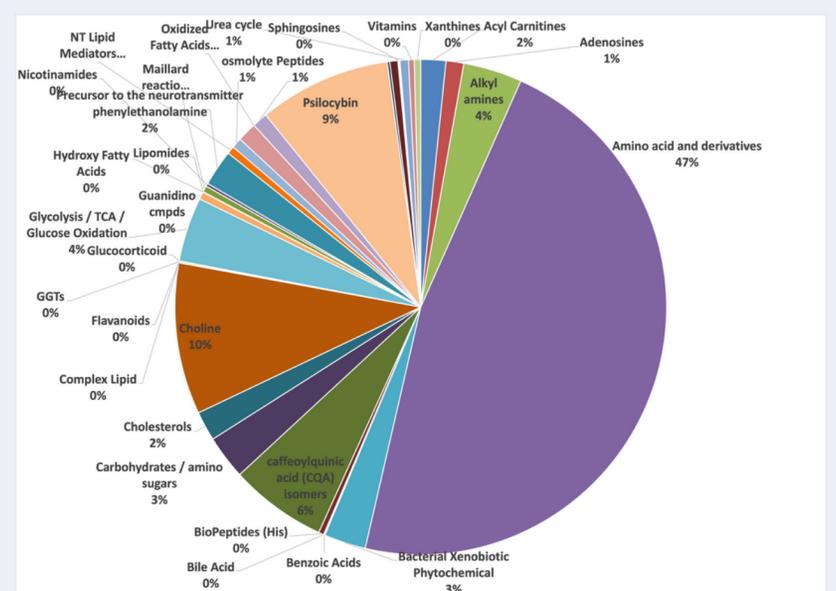
5. Product Marketing:

- Attributes identified to match the marketing of the examined product.
- Applications in probiotics, neuroactive products, skincare, and medical treatments.

LC-OMEGA Lipophilic Metabolites Distribution



OMEGA Scan: Polar Metabolites distribution



Over 6+ Orders of Magnitude



OMEGA Scan: 132 Most Abundant Metabolites

