PROFILING THE HEALTHY HUMAN VOCOME – UNIQUE INSIGHTS INTO ENDOGENOUS AND EXOGENOUS (GUT MICROBIAL) METABOLISM VIA DETECTION OF VOLATILE ORGANIC COMPOUNDS ON BREATH.

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A study of 45 healthy subjects characterised over 600 volatile organic compounds on exhaled breath at baseline and after lactulose ingestion, establishing the first reference profile of the healthy human VOCome and identifying compounds that change during microbiome activation.

KEY POINTS

- Baseline breath samples after fasting detected 600 distinct VOCs representing the endogenous healthy human VOCome.
- Following 10g lactulose ingestion, targeted analysis showed significant changes ($p<0.05$) in isoprene, 3-methylthiophene, phenol, and propionic acid levels at 45, 90, and 180 minutes.
- Untargeted analysis identified 14 additional compounds with significant increases post-lactulose, all reliably measured in at least 85% of individuals.
- Breath samples were collected over 10 minutes using the Breath Biopsy collection system with filtered air and analysed by GC-MS.
- The work provides normative reference ranges intended to form the foundation for future microbiome, nutritional, and gut biomarker research.

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