

Benchtop NMR QM-125



In manufacturing sites for various products and for simple synthesis verification, analytical instruments are required to include:

- 1) easy structural confirmation,
- 2) simple and easy operation and low maintenance costs, and
- 3) no need for special installation environments.

To meet such needs, NMR (Nuclear Magnetic Resonance), which can measure organic compounds in samples, can be utilized.

POINT 1 Structural Verification with Best-in-Class Resolution

The benchtop NMR QM-125 (manufactured by Q-Magnetics) achieves a best-in-class* 125 MHz (3 Tesla) speed through groundbreaking permanent magnet technology. It supports the analysis of hydrogen nuclei (protons) contained in compounds. Boasting high resolution, it delivers powerful rapid analysis of key components in the food and chemical fields.

POINT 2 Simple Operation and Low Maintenance

Analytical operations with the QM-125 involve simply drawing samples into a syringe (1 mL) and injecting them into the flow line (automatic injection is also possible). After analysis, it is also possible to collect samples using appropriate solvents. The measurement unit requires only 5 μ L, and the sample volume is small.

Permanent magnets generate magnetic fields, so refrigerants like liquid helium or liquid nitrogen are not required. This also frees you from regular maintenance such as refilling refrigerants.

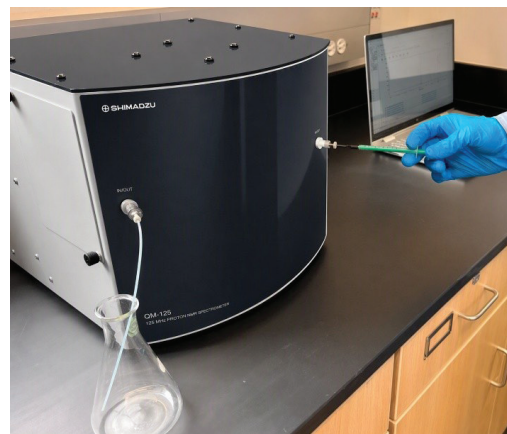
POINT 3 Compact Design that Fits Installation Locations

Unlike superconducting NMR, which requires special environments, the QM-125 can be installed anywhere such as a typical test bench.

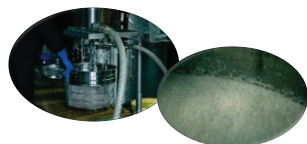
Robust yet designed with a small footprint (37 × 34 × 30 cm) and lightweight (28 kg).

Installation is simple, allowing customers to set it up themselves. Stable time after installation is short, making it easy to relocate.

**According to our research, as of August 2026*

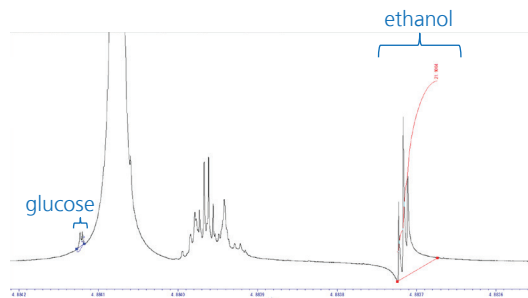


Case Study Analysis



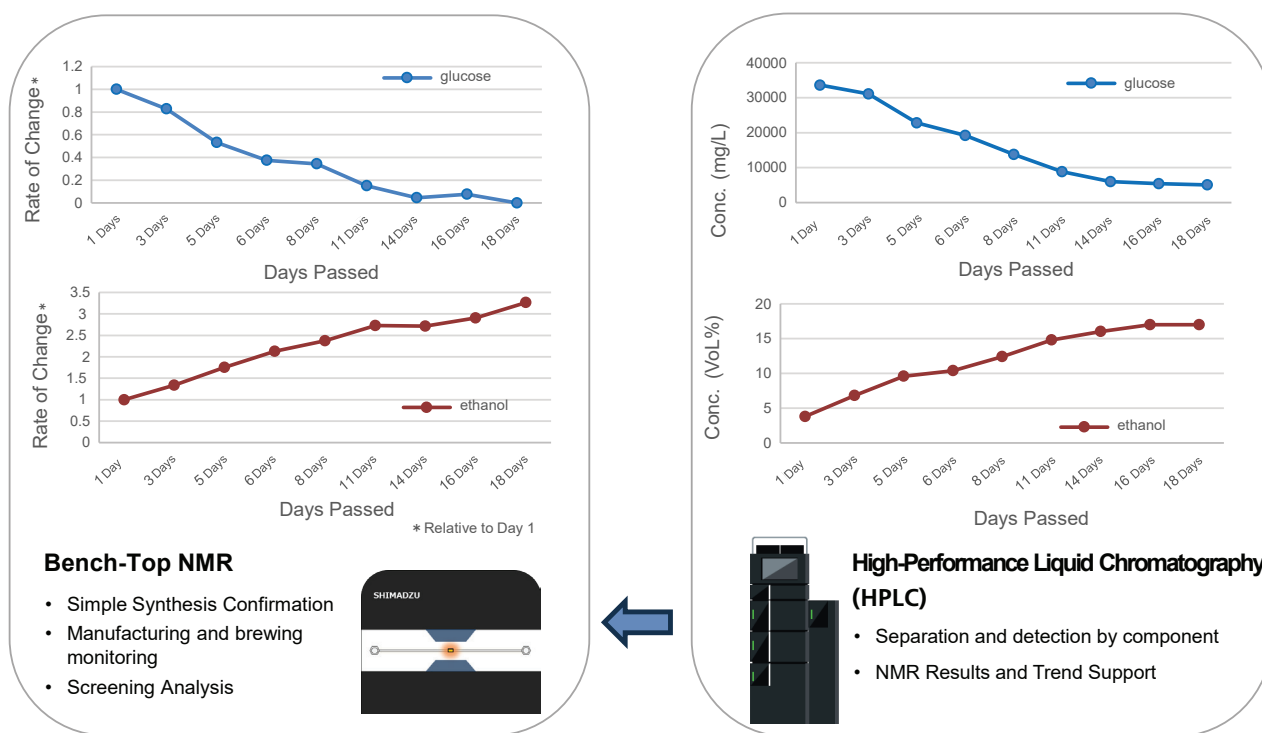
Brewing Monitoring

During sake brewing, the state of the mash is controlled by the BMD value (number of days $\times$ the day's Baume degree). The Baume degree is considered a guideline for the amount of sugars, mainly glucose, and is measured using a float (Baume meter). The alcohol content is also distilled and measured by float.



NMR Spectrum of Sake Mash

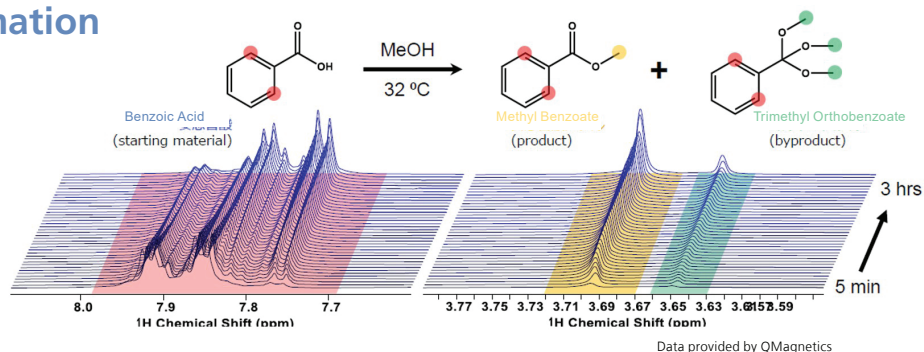
With the QM-125, glucose and ethanol can be measured simultaneously in a single measurement. Measurements using the QM-125 confirm that glucose consumed by yeast generally decreases while ethanol increases over the number of days left in storage. Component analysis results using high-performance liquid chromatography (HPLC) also show a similar trend.



Simple Synthesis Confirmation

It can also be used to check the quantitative trends of raw materials under synthesis and the products and by-products.

Regular monitoring of the Fischer esterification reaction of benzoic acid using QM-125 allows for the identification of signals unique to each product and by-product.



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