



• **the minispec** Body Composition Analysis (BCA)

Time-domain (TD-)NMR allows a simple measure of Body Composition in conscious animals.

Body Composition Analysis

- Whole animal body composition analysis
- Non-invasive
- No need to sacrifice animals
- No need for anesthetics
- Short analysis time (minutes)
- Allows for a high animal throughput
- Highly reproducible method
- Allows real longitudinal studies
- Careful animal handling

Several studies in the pharmaceutical industry validated the extremely valuable application of Time-Domain NMR (TD-NMR) relaxometry in body composition analysis of mice and rats [1-2]. Instead of harmful treatment as in chemical analysis or in DEXA, the animal is brought only into magnetic fields comparable to well known clinical MRI, the analysis takes place in a few minutes thus minimizing the effort and stress the animals are subjected to. The animals are awake, unavoidable movements are small as the methodology is optimized and quite forgiving in this respect. The relaxometric TD-NMR method introduced in 2001 has quickly gained market acceptance as a powerful non-destructive and non-invasive tool for characterizing, screening and phenotyping animal models with respect to body composition.

[1] B. Künnecke et al., Obesity Research, 12, 1604 (2004)

[2] G. Z. Taicher et al., Anal. Bioanal Chem. 377, 990 (2003)



Animal Restrainer with animate Mouse



minispec Magnet on Cart for vertical and horizontal Access



minispec Plus Software for Body Composition Analysis

Dedicated NMR instrument for demanding environments

TD-NMR systems are relatively compact (footprint of about 70 cm x 110 cm) and can be installed in the mice barn.

The sealed electronics and shielded magnet box keeps out dust and makes cleaning easy. Data analysis can be done directly on the workstation used to operate the system, or, can be automatically transferred via network/LIMS for processing on a central data station.

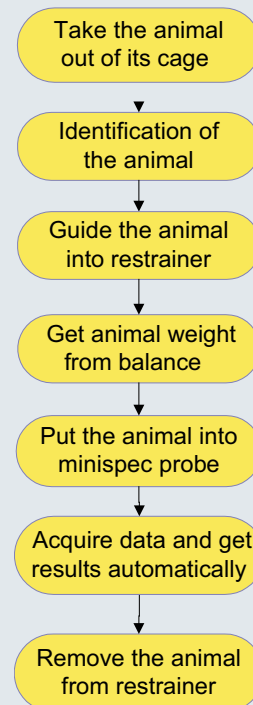
TD-NMR analysis eliminates labour-intensive and time-consuming wet chemical, dissection methods or DEXA measurements. The minispec analyzer is simple to operate and animal handling is straight forward.

The non-destructive method allows frequent testing of animals, thus longitudinal monitoring of body composition on the same animal during growth and therapeutic studies.

Specifications of the minispec LF50/mq7.5 analyzer

- Maximum mass of mice: about 50 g (corresponding to 80 ml volume). For larger animals up to 650 g the minispec LF90 is recommended.
- Maximum inner diameter of the mice container: 48 mm
- Accuracy and precision: about 1% of total mass
- Calibration with standards, with animals or according to special user requirements.
- Measurement frequency: 7.5 MHz
- Alternatively to the standard system: horizontal access to the magnet
- User friendly interface for simple operation during measurement series.
- Microsoft Windows system for data acquisition combined with a Microsoft Access data base allowing safe data management without user labour effort.
- ISO 9001:2000 certified
- CE conformity

BCA Workflow:



Graphical User Interface minispec Plus:

- User is guided through measurement procedure.
- Measurement results are stored in a data base and can be exported to user's data systems.
- Direct communication with a balance: convenient and reliable transfer of mice mass.
- Calibration procedure: simple and reliable with full flexibility.
- For advanced users: access to the NMR timing parameters allowing an easy adaptation of standards to special needs.

Magnetic safety measures apply to the operation of the minispec.

Bruker Optics is ISO 9001 certified.

www.brukeroptics.com

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