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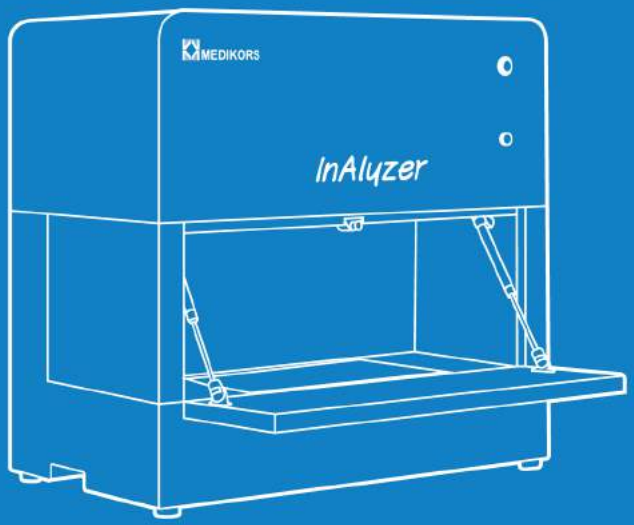
INALYZER

High Resolution DXA(Dual energy X-ray Absorptiometry) Body Composition Analyzer for Laboratory



ANIMA LAB
animal facility and laboratory equipment • animal research models

CE

Technology Makes Life
MEDIKORS

At MediKors Inc.

over 30% of the staff are researchers. As a technology-oriented company, we have been conducting various national R&D projects. In 2014, we launched the world's first 108-um body composition analyzer for experimental animals, which is being supplied to universities in Korea and abroad, university hospitals, and national and public research centers. Based on our technological competence, MediKors secured a high level of precision and radical price competitiveness, with which we entered the human medical equipment market and have been constantly striving to contribute to distributing useful medical diagnosis and analysis technologies. MediKors values infinite challenge, sense of responsibility, craftsmanship, and humanity, and strives to 'discover technologies and provide products and services that enrich human life and happiness, with creative and honest staff. Under the slogan, 'Technology makes life,' we believe constant development of technology enriches human life, and try to provide a variety of high-tech products and services that are easy to use.

Analysis system of Bone Mineral Density and Body composition based on DXA for laboratory

* DXA (Dual energy X-ray Absorptiometry)

1 Minute

InAlyzer provides Bone Mineral Density and body composition results due to total body imaging within 1 Minute. With fast imaging, you have quick access to your critical data and are more secure to animals.

Academic and pharmaceutical researchers commonly use rats and small animals to investigate substances that affect genetics, cell physiology, and bone or soft tissue composition.

Bone and tissue composition measurements using DXA measurements eliminate the need for destructive chemistry analysis and are a time-consuming and labor-intensive process that takes days or weeks to complete.

DXA measurements give researchers the opportunity to measure multiple times over the life of an animal.

Unfortunately, the spatial resolution of a table DXA measurement is not so good for a mouse, and the rectilinear scanning process of older peripheral DXA measurements takes 5 minutes to acquire a whole body with relatively low precision and spatial resolution. The long process requires careful sedation with injection anesthesia or respiratory anesthesia and often threatens animal safety.

Benefits

of DXA(Dual energy X-ray Absorptiometry) for Laboratory

InAlyzer applied DXA technology to analyze the Bone Mineral Density and composition of soft tissues.

DXA (Dual energy X-ray Absorptiometry) is a technology that uses two X-rays of different types of energy to examine a target. High-energy X-rays have small attenuation when penetrating through the material and low X-rays have large attenuation. This technique is accomplished by knowing in advance the dual energy X-ray characteristics of the material to be analyzed in order to analyze a particular substance (eg, bone, fat, lean) and as a result mass values can be obtained.

The accuracy of measuring BMD with a single energy in CT can not be guaranteed because a single energy X-ray can not calculate the actual amount of material and only the attenuation can be calculated. And because of the artifacts that occur when reconstructing 3D data with CT data obtained by rotation, it is difficult to provide accurate measurement results.

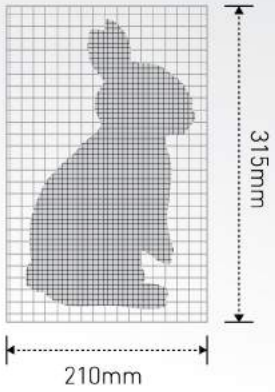
BIA (Bioelectrical Impedance Analysis) technology for body composition analysis is impossible to apply to small animal because path for analysis is too small and electrode is difficult to attach, basically BIA analysis accuracy is lower than DXA.

DXA is known to be the most accurate technology for measuring osteoporosis and obesity by measuring bone density and body composition of the human body.

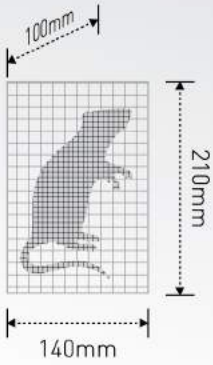
Measurement

InAlyzer allows automated accurate and precise measurement of bones and tissues for small animals (eg, mice, lemmings, rats) from 10- 500 grams, including intermediate animals weighing from 500 g to 3000 g basically.

InAlyzer is ideal for longitudinal studies because of the excellent precision of BMD and Fat.



[Optional model]



[Basic model]

InAlyzer has an optional model with a large measuring area of 210mm x 315mm for the acceptance of larger animals such as rabbits and guinea pigs, as well as a basic model with a scan area of 140mm x 210mm for small animals or extracts of rats hamster Mongolia. The size of the scan area is the size of the area to be measured.

The size of the measurable object is the size inside the cabinet and can be measured when the thickness is not over 100mm.

The product is extremely shielded from X-rays from being exposed to the outside, so no additional shielding facility is required.

An observation camera for monitoring the internal condition is connected to InAlyzer software, so that the internal status can be constantly monitored.

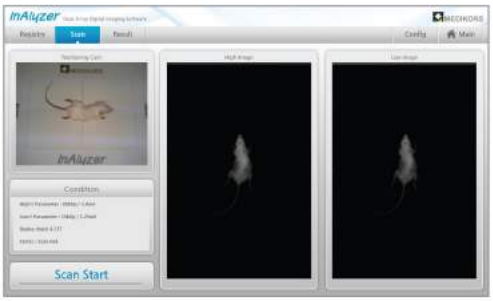
The measurement is basically completed within 30 seconds exposure and the measurement can be completed within 1 minute even if the internal calibration time before measure-ment is included.

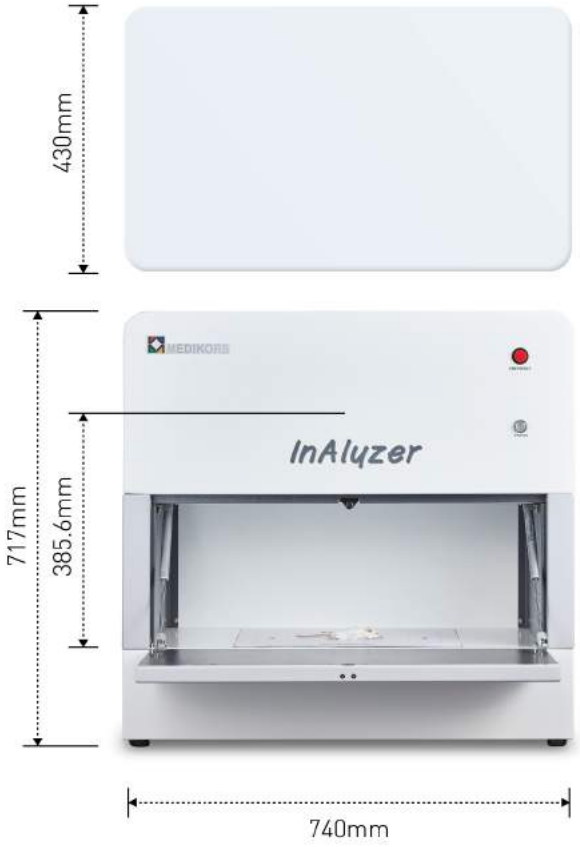
Depending on user's choice of accuracy, the measurement can be chosen 1, 3 or 5 minute measurement mode.

Analysis

The analysis page provides mass values for BMD, BMC (Bone Mineral Contents), Fat, and Lean for the material in the entire scan area, and provides the total mass derived from the each mass and the ratio of each composition to the total mass.

30 ROI (Region Of Interest) and 10 XROI (eXclude ROI), in addition 30 CROI (Customizable ROI) and 10 CXROI (Customizable XROI), are provided along with default analysis. The ROI is rectangular shape and the CROI is spline shape and both functions can resized and rotated. You can use ROI and CROI to perform analysis on the specific parts you want to analyze or that you want to remove from analysis using XROI and CXROI.

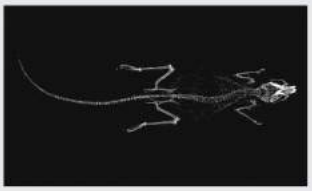


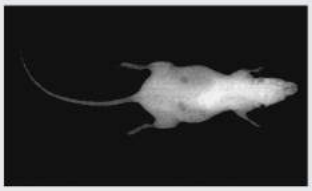


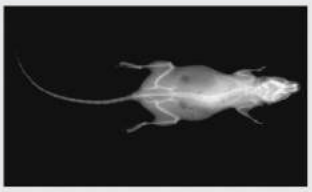
Analysis screen provides energy X-ray image, bone image and body composition image. Especially, body composition image is provided in color so that you can easily see the part with high body fat percentage. Simple ruler is supplied on the image with easy zoom operating additionally.

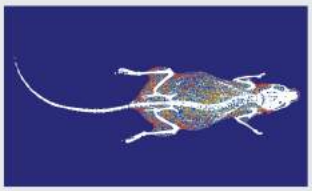
Result Parameters

Parameter	Unit	Description
BMC	g	Bone Mineral Contents (Bone mass)
BMC ratio	%	BMC/ Total mass
FAT	g	FAT contents (FAT mass)
FAT ratio	%	FAT/ Total mass
LEAN	g	LEAN contents (LEAN mass)
LEAN ratio	%	LEAN/ Total mass
Total mass	g	Total weight
BMD	g/cm^2	Bone Mineral Density
Bone Area	cm^2	Area of bone
Bone Volume	cm^3	Estimated bone volume
Fat in Tissue	%	FAT/ Tissue, Tissue = FAT + LEAN


[Bone View]


[Tissue View]


[Low energy View]


[Body Composition View]

Feature

Longitudinal study

It is possible to trace the changes by follow-up examination during the period required for study such as daily dose, weekly dose, and monthly dose by adding the test factors such as drug or food.

Compact size & Safety

The size of main unit is compact and internal lead shielding treatment effectively shields radiation exposure, which is safe for researchers to experiment for a long time.

Monitoring camera

The built-in real-time camera allows you to observe the movement inside.

Selectable scan time

It can measure in three modes such as Quick (1min), Optimum(3min), and Accuracy(5min) according to the accuracy of results.

High resolution image

It provides high-resolution images of 5.0 lp / mm, enabling structural analysis and providing various images such as bone images and body composition images for easy analysis.

Easy paperwork

It is very convenient to create results such as reports and papers because it is efficient to organize and edit data of research result by storing objective data and image as external file such as Excel and Tiff.

Access point for anesthesia

Anesthesia is used in many animal studies to immobilize animals while scanning or imaging. InAlyzer is designed with an access point to allow continuous anesthetic gas flow and ensure complete animal immobility during imaging.

Specification

Beam Type	Fan Beam	**Operating System on PC**	Windows 7/8/10 (recently upgraded)
Scan Area	140mm x 210mm, 210 x 315mm (optional)		
Scan Time	1min.(Quick), 3min.(Optimum), 5min.(Accuracy)	**Display Resolution**	1280 x 768 (monitor)
Exposure Time	25sec(Quick), 75sec(Optimum), 125sec(Accuracy)	**Dimension**	740(W) x 430(D) x 717(H)mm
Result Parameter	BMD and Body composition (Fat, Lean, BMC)	**Weight**	115Kg
Precision	< 1% (CV, Phantom)	**AC Power**	100 ~ 240VAC, 50/60Hz
Image pixel Size	100um x 100um (about)	**Power Consumption**	300VA, standard power
Expendables	Positioning Paper	**Operating Temperature**	20 ~ 30°C

For more information contact
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