

Technology Makes Life



Inalyzer

Ultra high resolution Digital Radiography System
with DXA Body Composition Analysis function



DXA

(Dual energy X-ray Absorptiometry) Body Composition Analysis function

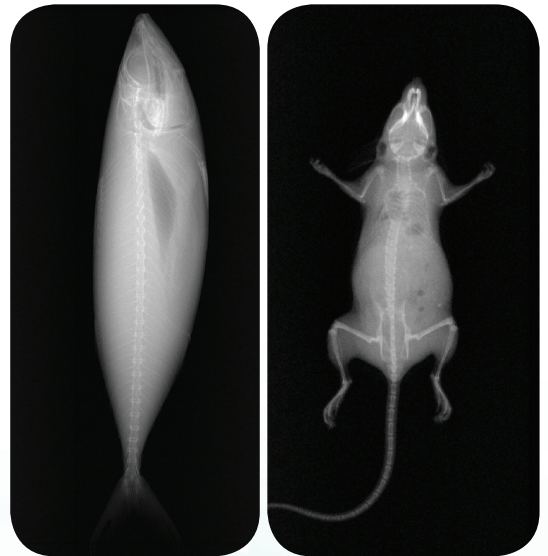
Academic and pharmaceutical researchers commonly use mice and small animals for investigations of genetics, cellular physiology, and of agents affecting bone or soft-tissue composition. Bone and tissue composition measurement using dual energy x-ray absorptiometry (DXA) measurement eliminate the need for destructive chemical analysis, a time and labor-consuming process that requires days or weeks to complete. DXA measurement allows the researcher the opportunity to make multiple measurements in situ during the life of the animal - providing true longitudinal measures. Unfortunately, the spatial resolution of table DXA measurement is too poor for mice and the rectilinear scanning process of older peripheral DXA measurement require as much as five minutes for a total body acquisition with relatively poor precision and spatial resolution. The long process requires careful sedation techniques and often endangers animal safety. The InAlyzer (Medikors Inc.) provides bone mineral and body composition results from total body imaging in less than 30 seconds. Fast imaging allows faster access to important data and is safer on animals.



Ultra high resolution Digital Radiography System

Ultra-high resolution x-ray imaging is an important tool in investigating a variety of disease states. From metastatic cancer to arthritis and osteoporosis, small animal testing models are commonly used. Both in vivo and ex vivo planar imaging is used to screen, track, and evaluate structural changes in these studies. InAlyzer (Medikors Inc.) Dual energy x-ray absorptiometry (DXA) systems allow researchers to take images directly in the vivarium to protect the integrity of the colony. These planar imaging systems are less expensive, subject animals to lower doses, and provide faster results than microCT systems.

Meet the powerful digital-imaging solutions specially designed for veterinary practices. InAlyzer Image software, combined with the InAlyzer DR System, allows you to transform your veterinary practice to digital, easily and affordably. These systems are optimized with precisely the features your veterinary practice needs – including vet-specific order entry and exam views, customized animal-image processing and a full suite of veterinary measurement tools.



Can the “InAlyzer” REALLY acquire fat, lean, and bone data from the total body composition data in vivo?

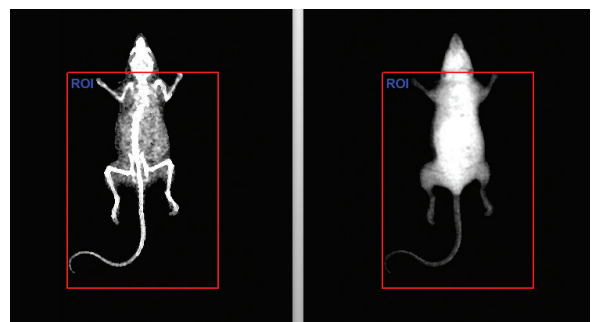
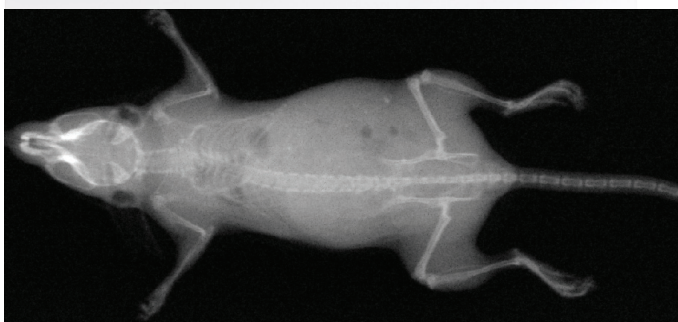
The InAlyzer basically allows automated, accurate and precise measurement of bone and tissue for small animals weighing 10-500g (e.g., mice, lemmings, rat) including middle animals weighting 500g-3000g. InAlyzer uses a lower x-ray energy than that used for peripheral densitometry in humans in order to achieve contrast in the low density bone. Excellent precision of BMD and Fat makes InAlyzer ideal for longitudinal studies.

With an image area of 210mm x 315mm (bigger window, optional), the InAlyzer can image the entire body of most mice including hamsters and Mongolian gerbils, as well as rabbits and guinea pigs.

The standard total body result focuses on the sub-cranial region improving sensitivity by excluding the inactive bone and tissue of the cranium. There are manual regions of interest (ROIs) for selected areas within the total body image, such as spine and femur. Researchers using the middle animal can image large portions of the animal and position ROIs over their area of interest (i.e. entire leg, spine, abdomen) producing both bone and tissue results.



Category / Value		
Category	Value	Percent
TOTAL BODY		
Bone	1.09g	5.7%
Fat	3.44g	17.9%
Lean	14.69	76.5
Total	19.21	100.0%
Average BMD	0.020	g/cm ²
Fat in Tissue		19.0%
ROI		
Bone	0.74g	4.3%
Fat	3.21g	18.8%
Lean	13.12g	76.9%
Total	17.07g	100.0%
Average BMD	0.0128	g/cm ²
Fat in Tissue		19.6%



BENEFITS



Save Animals

A ten-week 'longitudinal' study of body composition - with weekly data points and a sample size of ten - require 100 animals (Ten sacrificed per week for ten weeks). While the InAlyzer only needs one or three animals to be imaged weekly, in true longitudinal fashion, saving 1,000 animals.

Save Time

Short-term time savings with the InAlyzer are obvious - the InAlyzer needs only 30 seconds to acquire and analyze bone and tissue results while chemical extraction requires one man-hour (homogenizing, scraping, cleaning, weighing, drying, chemical extraction, more weighing.). Longer-term time-savings are just as dramatic with chemical extraction's duration requiring days of drying and ashing time, meanwhile, the InAlyzer is complete in 30 seconds. Yes, with InAlyzer, you can have your data TODAY!

Save Money

The InAlyzer saves your precious grant moneys with less animals and labor requirements as described above. But look deeper. Fewer animals require less cages, space, animal handling labor, food, chemicals, lab equipment saving substantial research costs and streamlining your operation.

Improve Confidence

Sufficient time and animals are saved with the InAlyzer that it is both time- and cost-efficient to double, or even triple, the sample size of most any study. Larger sample sizes mean more robust statistics that please reviewers to get data published and/or products to market faster.



FAQs



Q. How does the “InAlyzer” work?

A InAlyzer utilizes Dual energy X-ray Absorptiometry (DXA) technology. A small x-ray source exposes the entire animal to a fan shaped beam of both high and low energy x-rays. A high-resolution digital picture (108x108um) is taken by using CCD detector with TDI (time delayed Integration) method. The ratio of attenuation of the high and low energies allows the InAlyzer to separate bone from tissue and, from within the tissue samples, the lean and fat.

Q. Can the “InAlyzer” REALLY acquire fat, lean, and bone data from the total body Composition data in vivo?

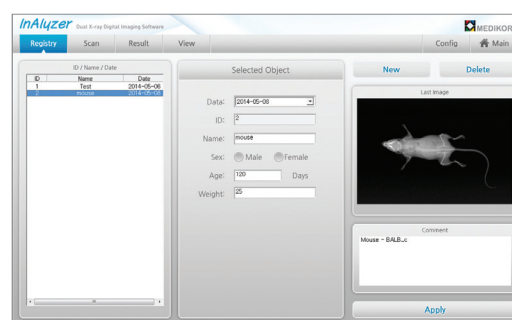
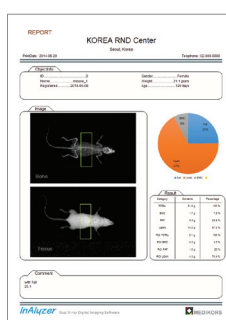
A Yes. A safe sedation time for a mouse is a maximum of about five to seven minutes. With an image acquisition time for the total body of less than thirty seconds, the InAlyzer can safely handle mice in vivo. Results directly measured are bone mineral density (BMD) and % Fat (of tissue). From these results the InAlyzer can compute bone, fat and lean mass. Results today, without sacrificing the animals!

Q. How large an animal can the “InAlyzer” handle?

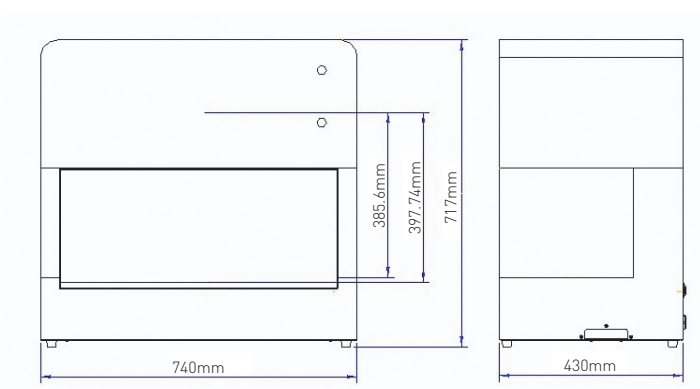
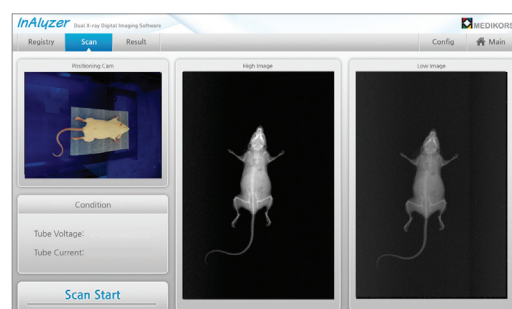
A The imaging window (210x315mm) is large enough for the body of mouse or similar sized animals, or small sized cats and dogs. The small animal has largely inactive bones and tissues, so total body composition results are more sensitive when results are determined subcranially. Additionally, the spine, femurs, tibia, abdomen, thigh or other bone and tissue regions of larger animals, such as the rat, dog, cat, guinea pig and marmoset monkey, are easily studied with a manually created ROI box.

Q. How accurate is the “InAlyzer”?

A Accuracy was initially determined using phantoms of known values in the research labs at Medikors and a correlation study between the “InAlyzer” and the other DXA analysis machine. You can simply verify the accuracy of InAlyzer by comparing the total body mass of InAlyzer with weight of electronic scale.



SPECIFICATIONS	
X-Ray System	DXA (Dual energy X-ray Absorptiometry)
Scan Method	Fan Beam
Scan Site	Small Animal Total Body
Scan Time	25 Sec
Measurement Parameter	Body Composition (Fat/Lean/BMC/BMD/FAT%)
Precision & Accuracy	<1% [cv]
Positioning	Center in scan area
Image area	140mm x 210mm, 210mm x 315mm (optional)
Pixel size	108 x 108um
Operating System	Windows 7/ 8 (32bit, 64bit)
Monitor Resolution	1280 x 768 (1920 x 1080)
Dimensions	740(W) x 430(D) x 717(H)
Weight	95kg
Power/ Environment	90~264VAC
Operating Temp	10 ~ 35°C





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