

Spotlight Feature

What goes in must come out: Food and Bedding

It was not so long ago that the only food available for laboratory animals was pelleted chow. There were formulations for mice, rats, dogs, cats, rabbits, guinea pigs, monkeys, fish and even bears. The chow came in different size pellets or grinds or as crackers.

But along with the explosion of choices in pet foods, including different sizes, shapes, colors, flavors, textures, ingredients and ingredient qualities, there is now a plethora of chows and other foods for most laboratory animals, even exotics.

There are two major international laboratory animal diet suppliers and many smaller ones. Ronald Gordon, director of the animal laboratories at Wesleyan University in Middletown, Connecticut, US, assures us that in his years in this field, he has used products for all laboratory species, “from primates down to mice...in trailer truck volumes,” and “you can trust either [major] company 100 percent.”

Protein?

Both companies have websites that present detailed information about the diets and how the ingredients are purchased and processed. Nutritional content is also clearly presented, so that purchasers can select exactly what they need for their animals. A sales manager for one of the major companies explains that one major choice in rat and mouse diets is the percentage of protein. Appropriate protein content depends on the strain of rodent and whether the diet is for growth, reproduction or maintenance. He further adds that in Europe, rodent diets are more in line with the nutritional needs of the animals, whereas in the US, people tend to overfeed protein. Too high a protein content will stress the animals' kidneys, he notes. To accommodate these differences, some companies produce different foods

for different parts of the world, although they may also produce 'global' diets, sold in the US and Europe, so that research results may be standardized.

Reducing research variables

One of the major problems with laboratory animal nutrition is that diets containing soy or alfalfa meals as protein sources contain phyto-oestrogens, plant-derived estrogenic compounds. These phyto-oestrogens, present in the form of isoflavones, vary in quantity not only among different formulations of food, but also among different batches of the same food (Lab. Anim. 41, 1–18; 2007). Isoflavones can affect research results because they can act as either oestrogens or antioestrogens. Isoflavones can affect the reproductive systems of male and female rodents, bone mineral density in rats, the nervous system in rats (including stress and anxiety and pain perception) and cancer induction and development in rats.

Dietary phyto-oestrogens may also affect the learning, memory, cardiovascular system and sexual development in rodents (ILAR J. 45, 401–416; 2004. According to this report, there are a number of questions that researchers should ask in selecting a diet for a study:

“Will dietary estrogens or total ME [metabolizable energy] alter the endpoint(s)? Will pellet hardness, diet palatability, and food consumption alter results? Does the diet remove variables or add more variables to the study? What diet(s) were the dams fed during gestation/lactation, and what are the potential effects of this diet on the fetus and on fetal genetic imprinting? What diet did the weanlings or test animals consume before the study, and what are the potential effects on subsequent exposure to estrogens? Will

environmental exogenous estrogens such as BPA [bisphenol A] alter the endpoint(s)? Which estrogens should be tested for and which assay should be used for specific estrogens?”

Companies manufacture some diets that contain neither soy nor alfalfa, obviating the problem of dietary phyto-oestrogens.

Contamination

A study showed contamination of laboratory animal diets with methylmercury, which is a neurotoxin (Env. Health Perspect. 113, 1120–1122; 2005). Methylmercury has been found in fish and fishmeal, and this may be the source of food contamination. The authors found a commercial diet from one of the major sources that did not contain fishmeal and was free of mercury.

Nitrosamines create free radicals that may be carcinogenic. These, too, should not be in animal feeds, according to the sales manager. The food companies are aware of these potential sources of contamination and provide diets that are as free of nitrosamines as possible.

Specialty diets

Most companies will manufacture diets to order for specific research problems. Some have medicated diets that contain antihelminthics. Nutritionists at the food companies will work with researchers to come up with the diet that is right for the experimental protocol. Some companies have disinfected irradiated diets or autoclavable feeds. Information on these may be on the companies' websites or may be discussed with the companies.

The only complaint about food is that there are not sufficient varieties of fish food

SYCHEM

WORLD OF CHEMICAL & MACHINE SOLUTIONS

Reaching New Heights
in sterilisation...



Specialists in the Supply & Maintenance of
Disinfection and Sterilisation Equipment...



Washer Disinfectors

Large Cage & Rack Washers
Cabinet Style Cage & Bottle Washers
Freestanding Glassware Washer/Dryers



Autoclaves

Floor Loaded Bulk Autoclaves
Trolley Loaded Cabinet Autoclaves
Benchtop & Vertical Autoclaves

Sterilisers

Under-Counter Glassware Washers
Free standing Glass & Bottle Washers



Laundry Equipment

ASEP Barrier Laundry Machines
Industrial Laundry Washer/Dryers



Chemicals

Cage & Bottle Washing
Glassware Washing

For full product listings please call a member
of our friendly team or visit our website...

T: 0845 644 6824 | www.sychem.co.uk

Expert in the world of research diets



SDS has an international
reputation for the quality
of its research diets,
manufacturing and
storage facilities, and for
the expertise of its staff.

Our comprehensive range
of fixed formula diets,
for all species, includes:

- Expanded
- Pelleted • Ground
- Certificated (SQC)
- Irradiated • Autoclavable
- Custom made

Whatever your needs,
wherever your location,
we can supply and deliver
worldwide the quality
research diets you require.



PO Box 705, Witham, CM8 3AD England
T: +44 (0)1376 511260 F: +44 (0)1376 511247
E: info@sdsdiets.com

ABEDD

www.abedd.com

Enrichment of Environment



LAB & VET Service GmbH

Häuserstrasse 94/8 1180 Vienna Austria
Phone: +43-1-903 24 58 Fax: +43-1-480 77 06
office@abedd.com



Lillico

SERVING BIOTECHNOLOGY

*Quality bedding –
Keeping thousands clean and comfortable every day*



Lillico
PO Box 431
RH6 0UW
United Kingdom
Tel: +44 (0) 1293 827940
Fax: +44 (0) 1293 782235
E-mail: sales@lillicobiotech.co.uk
www.lillicobiotech.co.uk

Lillico bedding and nesting materials give you a better choice for your
animals, their housing, their comfort, and your management system.
Whatever you require from simple floor covering to nest building material for
breeding colonies we can supply. And in a variety of materials all chosen
for their suitability for laboratory use, and all made from sustainable sources.

For the full brochure contact Lillico

Spotlight Feature

What goes in must come out: Food and Bedding

(cont.)

available. Wesleyan's Gordon makes his own dry flaked food for their zebrafish.

Bedding, too

Not only was there one major type of animal food not long ago, but bedding generally consisted of pine or cedar. But although these beddings had a wonderful odor, they contained plant resins with aromatic hydrocarbons that resulted in

elevated liver enzymes in the animals. In recent years, says the food company sales manager, the movement has been towards more water-absorbent beddings with reduced dust. Many food companies also offer bedding. Bedding can range from wood to corncobs to paper-based or cotton-based materials. Some of the super-absorbent paper beddings that are available now could, if necessary, be left in the cages of animals in IVCs for as long as 2-3 weeks without changing, although

most laboratories change bedding much more frequently.

Both bedding and food may serve as sources of environmental enrichment: food or food treats can be hidden in cages or under bedding, and bedding may come in as a pad or box and be shredded by the animal into bedding material. Bedding can be autoclavable or irradiated, and, in the case of disposable IVCs, can come prepackaged within the IVC unit.

Suppliers of Laboratory Animal Bedding and Diet include:

Abedd
Aston Pharma Ltd
Datesand Ltd
Harlan

IPS Product Supplies Ltd
Lillico Biotechnology Research Diets Inc
SAFE
Special Diets Services

For a more extensive list of suppliers please refer to the Lab Animal Europe Buyers Guide. Copies available on request from info@labanimaleurope.eu

The complete BEDDING MATERIAL solution

1. CLEAN MATERIALS

Introduced into the system using a special loading funnel.

2. THE DISPENSER

Dispenses the correct quantity into respective cages.

3. USED MATERIAL

Evacuated and transported into a storage container.

4. THE SYSTEM

Fully enclosed to stop dust contamination of the facility.

