

## Advantages of Health Monitoring<sup>\*)</sup>

by *Glaes Rehbinder*,

Head Unit for Laboratory Animals, the National Veterinary Institute, Uppsala.

There are several aspects concerning the need and advantages of health monitoring programmes for animals used in experimental investigations and making of biological products.

### *Research*

Animals are used in many kinds of biological research such as physiology, toxicology, pharmacology, immunology, experimental transmission of diseases, etology etc. These animals are in fact "measuring instruments", (however, not mechanical objects but biologic systems responding in diverse ways to alteration in their internal and external environment), and as such they have to be calibrated to make the achieved research data reliable and performed experiments repeatable. It is thus routinely accepted that healthy animals are required for the acquisition of valid research data. It is difficult, however to define what we mean by healthy. Several agents (virus, bacteria, parasites etc.) may infect laboratory animals without producing manifest clinical disease. When infected animals are exposed to handling, experimental procedures and stress this may produce manifest disease in the animals which, in its turn, may complicate the interpretation of achieved results or ruin of the experiment (*Kelly* 1980).

It is well known that different infectious diseases although subclinical can interfere with several biologic parameters such as the immunoresponse, growthrate, behaviour (*Hunneyball* 1983, *Turnbull* 1983) and also histopathological interpretations

(*Rutty* 1983). Depending, however, upon the kind of research, it is not always essential to use "disease free" animals. It is nevertheless important to state the kind of animals used, *to define* them. A defined status does not mean the absence of all diseases that may complicate the interpretation of research data. It does, however, imply that the animal is suitable for its intended research purpose.

This requires knowledge of the research project in order to determine the type of the animal needed and absence or previous exposure to various disease organisms. In some cases, acceptable levels may be the answer, whereas in others it may require a total absence. It is thus obvious that research work with laboratory animals requires defined animals or even animals defined for a specific research project. Consequently, it is important to have a health surveillance programme – a health monitoring programme – to determine the status of the animals used, both before and sometimes also during the experiment – if the animals during the experiment are not kept in an environment that is required to retain their original status. It should be underlined that if healthy and/or defined animals are used, the number of animals involved will, in most instances, be reduced, thus saving cost and also time.

Obviously experimental data obtained from and research performed on healthy/defined animals are more acceptable to the public.

### *Biological products*

Biological products are often used in other animals and man (sera, tissues, monoclonal antibodies etc.). It is of course im-

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portant that these products are suitable for their intended use – experiment or treatment – and not transferring infectious agents neither to experimental animals nor treated animals or humans. There are examples of viruses (e.g. Hantaan, LCM and possibly Reo 3) as well as bacteria (e.g. Salmonella, Listeria) and parasites (e.g. Toxoplasma, Encephalitozoon) that may be dangerous to man. Numerous agents may be transmitted, by inoculation products, also between different species. To avoid and control such hazards a health monitoring programme of producing animals and the products is needed.

#### *Zoonosis*

Several categories of personnel, working with laboratory animals, may, if the animals are carrying zoonotic diseases, be exposed to a considerable risk of contamination. Several such diseases are to be found in different species of laboratory animals. Some of these diseases are pretty common (e.g. Dermatophytes, Cheyletiella sp., Toxoplasma etc.) but rather seldom causing severe problems while others (e.g. Salmonella, Listeria, Hantaan etc.) are more rare but may cause considerable problems and acute disease.

A prerequisite for all kinds of animals used in laboratory work and husbandry must be that they at least are free from important zoonotic diseases and that all measures are taken to eradicate these diseases.

To achieve a satisfactory and sufficient safety for personnel working with laboratory animals a regular health monitoring programming is needed.

#### *The health monitoring programme*

An appropriate health monitoring programme should imply a regular check of

laboratory animal colonies by means of pathology (gross- and histopathology), bacteriology (including mycoplasmas), parasitology and virology (mainly serology but, if needed, also tissue culture).

The laboratory performing a health monitoring programme must be sufficiently equipped to be able to undertake control measures concerning the results obtained in different investigations. Thus the health monitoring programme, as such, has to be regularly checked in order to obtain reliable results.

#### *Conclusions*

The use of an appropriate health monitoring and well defined animals will

- produce more reliable and repeatable research data
- reduce the number of animals used
- diminish the risk of spreading infectious agents by means of biological products
- considerably decrease the risk for personnel of all categories, handling laboratory animals, to be infected with zoonotic diseases.

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