REPORT FROM

XV Nordiska Veterinärkongressen Stockholm 28/07—01/08 1986

The congress was attended by 1000 veterinarians.

More than 200 papers were presented as plenary lectures and in the 5×5 parallel sections and the 2×6 parallel workshops. Practically all disciplines within the field of veterinariny medicine – basic as well as applied – were dealt with, including laboratory animal science.

The workshop "The Role of the Veterinarian in Laboratory Animal Science" was chaired by J. Carstensen, Denmark and comprised 5 items:

J. Carstensen: Introduction: The Veterinarian and the Quality of Animal Models.

C. Rehbinder: Advantages of Health Monitoring.

T. Nevalainen: Minimal Description of Health Criteria.

T. Nevalainen: Sampling Tactics in Health Monitoring.

P. Svendsen: An Improved Method for Detection of Mouse Hepatitis Virus in Nude Mice.

After the presentations thorough and fruitful discussions were held among the 25 participants.

The papers or their abstracts are published in Scand-LAS Nyt no. 13, 3 and 13, 4 1986.

J. Carstensen: Introduction: The Veterinarian and the Quality of Animal Models

Veterinarians play an important role in applied laboratory animal science as members of research teams or as advisors, due to their education and specialization.

The themes at this workshop exhibit a number of areas of service the veterinarians can offer on the basis of their expertise as professional biologists.

Scientists are still presenting posters at international congresses, which show lack of understanding of basic principles for performing and reporting experiments using animal models. Especially researchers outside Europe and North America are not as familiar with the ethical aspects in using laboratory animals, and in selecting the appropriate animal model to give a good answer to the scientific question raised.

It is astonishing to see how many scientists still focus at LD 50 and other crude acute effects in their tests instead of applying sophisticated analytical methods which disclose more subtle physiological alterations in the organs, organ systems or functions. Studies with acutely exposed animals are often performed even though the topic in question is the effects of, or risks from, longer term exposure. In addition, the description of the animal model is in many abstracts so inadequate, that an evaluation of the whole study first can be made after a thorough interview with the author. It is a question whether these people have performed *studies* or just carried out *testing* without any sense for the quality in their work.

The word "quality" has been used a great deal in connection with laboratory animals since the SPF concept was introduced. Quality of the animals should be the prerequisite for performing reliable biological research.

But what does "quality" really mean in laboratory animal science?

There may be as many different conceptions of quality in relation to laboratory animals as we are participants in this workshop.

The definitions in ten dictionaries were very much alike, but not very informative. The definitions of "quality" in Longman

New Universal Directory, Longman 1982 are:

1a. Perculiar and essential character/ nature
1b. An inherent feature/property
2a. Degree of excellence/grade
2b. Superiority in kind

These definitions are very flexible and leave many questions open to individual interpretation. The presentations and discussions here can hopefully elucidate the complexicity and perhaps unite our understanding within certain areas.

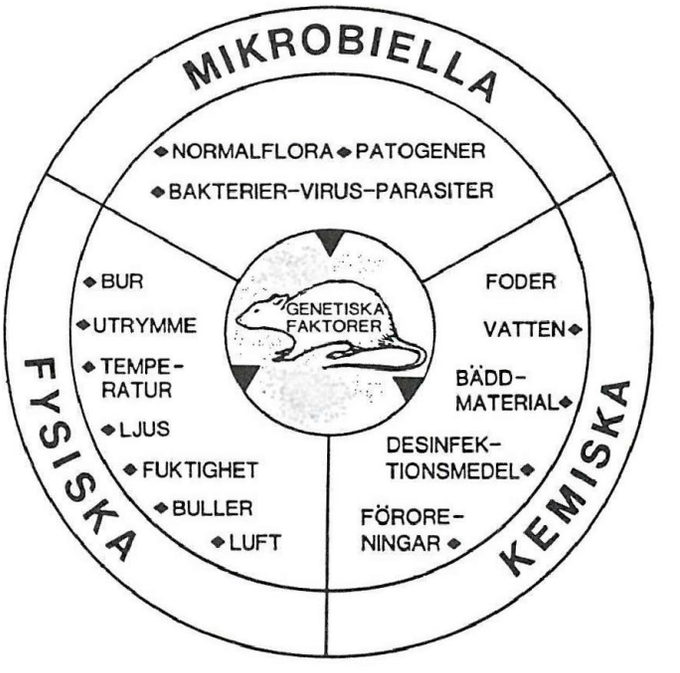
As an advisor the veterinarian will certainly know how to define the appropriate individual model in accordance with the demand in the actual situation. In other words we shall not adopt a stereotyped attitude towards the parameters composing quality.

The animals we choose as models are results of varied past and actual environmental interactions on individuals often with varied genetic backgrounds. The animal model responds according to exogenous impacts on its physiological status with a varied ability to modify its homeostasis before, during and after the experiment.

These multifactorial events are well known and listed in the figure from the cover of the Scand-LAS information on food.

It should be emphasized that methods exist, both physical, chemical, biochemical and immunological, that with a high sensitivity and specificity enable us to measure very small concentrations or changes in concentrations in samples containing organic and inorganic chemicals including hormones and transmitters. There are, however, often open questions as to what the consequence for the animal model as such and what the relevance of using this model as a tool, is.

Faktorer av betydelse för den biologiska responsen



The responsibilities of the veterinarians as advisors, in explaining to the users, the scientists, the animal technicians and the laboratory technicians, what in our opinion is the right concept for a study should be emphasized. The advice must be based on *scientific* knowledge. It is a question of science, not emotions or religion as often used by other groups nowadays.

In conclusion – define the needs – specify the quality accordingly – and ensure proper control and monitoring –. This is also in accordance with the requirements for performing non-clinical laboratory studies according to the guidelines for Good Laboratory Practice introduced by FDA, EPA, EEC and OECD ten years ago.

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Minimal Description of Health Criteria*)

by *Timo Nevalainen*, National Laboratory Animal Center, University of Kuopio, Kuopio, Finland

Research reports in scientific publications are far from precise when describing the experimental animals used. While they all may not specify even sex and strain of the animal, it is not surprising that there may be no comment of health status of the animals. Yet we all know that infection diseases are major complications of biomedical research.

There are several suggested specifications for description of animals, the one deserving attention is the recommendation of ICLAS. The ICLAS recommendation was considered indispensable for correct and optimal interpretation of the experimental results, and a prerequisite for repetition of the experiments by other investigators. Although the recommendation was addressed to the editors of scientific journals, it is hard to see its impact on articles.

As far as the health of the animals is concerned, FDA in its GLP guidelines, states that at the initiation of a non-clinical laboratory study, the animals shall be free of any disease or condition that might interfere with the purpose or conduct of the study. As a contrast to scientific articles the reports of safety evaluation tests do not have the problem of space, and in the report they publish only the results of procedures described in standard operational procedures (SOP). As far as animal health is concerned this is a reasonable combination and combined with the pathology of each animal at the termination it makes possible to evaluate the health status of the animals.

It is unlikely that scientific publications will ever accept elaborate list of pathogens proven absent nor is it feasible. The same applies to the description of health programmes, and their statistical significance. The minimal description of health criteria must therefore be approached through classification of animals. This is where the problem lies – many nations have classifications of their own, which are used to a varying degree within the country but not much elsewhere. The classification of animals according to the health status should be standardized incorporating the common elements of various classifications and reaching agreement on the rest. It should include requirements for constructional features, health control and reporting of its results.

*) Summary of paper presented at the XV Nordiska Veterinärkongressen (15th Nordic Veterinary Congress), Stockholm 28/7 — 1/8 1986.

Reference

ICLA Recommendation for the Specification of the Animals, the Husbandry, and the Techniques Used in Animal Experimentation. ICLA Bulletin no. 42 March 1978.

Sampling Tactics in Health Monitoring*)

by *Timo Nevalainen*, National Laboratory Animal Center, University of Kuopio, Kuopio, Finland

Be it everyday life or scientific research most of what we know is based on samples. The way samples are collected can, however, make the difference and in the worst occasion falsify the results and their interpretation.

The sampling plan of health monitoring should be aimed to detect the infections of the animals with pathogens with minimal delay and reasonable economical and technical burden. One of the first questions to be answered is how many samples are needed in order to have a statistically adequate and true assessment of health status. ILAR (1976) has published a method for determination of sample size which depends on the disease incidence and the confidence level of the detection at least one positive case. This is derived from tables of cumulative binomial probability distribution. Because the standard error of confidence changes relatively little between incidences of 30–70 %, this is the area where the table can be used accurately (*Cochran* 1977). Because there is no practical need to go over the incidence of 50 %, the area under 30 % is the only with practical interest.

Statistics based on the cumulative binomial distribution is valid only when test animals are chosen randomly. On the other hand exposing any animal in the colony to sampling may not be possible. Furthermore, it would be natural to emphasize the health status of the animals of the most likely age to be used.

The statistics mentioned also requires that each and every animal has the same risk of infection. Yet we all know that there are several differences due to strain, sex or other factors in susceptability to various diseases. Consequently, we may not detect the appearance of a viral disease, to which the strain we have does not produce a titer. In order to detect anything in a relatively short time a considerable frequency of sampling is required. ILAR proposes a frequency of every two months, some institutes do it bimonthly.

In conclusion, sampling in health monitoring should carry a statistical significance. Samples should be taken randomly rather than following rigid plans. Reasonable frequency of sampling is the key to fast detection.

References

Cochran, W.: Sampling Techniques. 3rd edition. John Wiley & Sons. NewY ork 1977.

ILAR: Long Term Holding of Laboratory Rodents. ILAR News 19: L1—L25, 1976.

*) Summary of paper presented at the XV Nordiska Veterinärkongressen (15th Nordic Veterinary Congress), Stockholm 28/7 — 1/8 1986.