

Reporting the results of animal experiments

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Introduction:

Scientific papers are published in a wide range of journals that do not necessarily focus primarily on the the three Rs. The purpose of publishing is not only to report scientific results, but also to enable others to evaluate both the scientific and ethical validity of the work conducted. Advances within the three Rs made during the course of such research should be easily detectable for those searching the literature. This imposes clear responsibilities on authors and journals alike, since they are often operating under pressures of time and space. These pressures must not, however, prevent publication of new techniques within the three Rs which other research groups expect to find when using the scientific literature to plan their own experiments.

Jane Smith *et al.* (1) examined 149 scientific papers in 8 journals published in 1990-1. Examples of parameters not mentioned were:

sex	28%	room temperature	72%
age	52%	relative humidity	89%
weight	71%	photoperiod	72%
source	53%	no. animals/cage	73%

- 30% of the papers did not mention how many animals were used.
- 45% of the papers where animals were killed said nothing about how the animals were killed.
- Many papers «toned down» what happened to animals that died or developed problems during the experiment.

Carlsson *et al.* (2) analysed the first 50 original articles reporting animal experiments in each of 14 major biomedical journals in 1970, 1980, 1990 and 2000 (a total of 2,800 articles). Although there was evidence of an improvement in reporting of the specification of the animals' husbandry and environmental conditions, parameters of importance for evaluation of the scientific quality of the research and welfare were generally poorly reported, but the proportion of papers with adequate information on most of the parameters increased between 1970 and 2000.

Materials & Methods:

To bring this up to date, we have analysed 21 (mammalian) or 27 (fish) parameters in the first 20 original articles reporting animal experiments in 8 major biomedical journals in 2004. Three of these were specialist journals within laboratory animal science. The other five journals specialise in reporting the results of fish research and all had high impact factors. Since fish now account for a large percentage of animals used in research (over 90% in Norway, and approximately 15% of all animals used in research in the EU), it was considered of interest to see if journals reporting the results of fish experiments differed from those that have published the results of research on mammals for many years.

Results:

Percentages of articles not mentioning the parameter:

Parameter	Fish journals	Lab animal journals
Total no. of animals used	55	25
Source	40	30
No. of animals per cage/tank	51	40
Sex	92	8
Genetic makeup	87	52
Age/weight	38	43
Temperature in room/water	15	74
Quarantine/acclimation period	61	73
Microbiological status	84	48
Water source	49	52
Reference to guidelines/code of conduct	98	10

There was also still considerable room for improvement in the phrases used to report the animal research (e.g. 'potable water', 'farm pigs', 'recommended methods'), which should be possible without necessarily lengthening each paper.

Conclusions:

Guidelines for planning (3) and reporting (4, 5) animal experiments should be used more frequently. The possibilities today of publishing full details of a protocol on the Internet should be exploited when constraints of space do not allow this information to be included in the paper itself. Only then is it possible for journal readers to evaluate the scientific and ethical quality of animal research.

References:

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- 3) Smith AJ & Allen T. The use of databases, information centres and guidelines when planning research that may involve animals. *Animal Welfare*, accepted for publication, November 2005.
- 4) Working Committee for the Biological Characterization of Laboratory Animals/GV-SOLAS. Guidelines for specification of animals and husbandry methods when reporting the results of animal experiments. *Laboratory Animals*, 1985, 19: 106-108 (www.lal.org.uk/pdf/files/gv.pdf)
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