



## Vivisection

'Vivisection', if taken literally, means cutting apart live animals. Of course, many experiments on animals do not involve any cutting at all, but it has become the generally accepted term for any experimenting performed on animals. It is an issue which arouses strong feelings, with many organisations calling for a halt to animal testing, whilst those involved in vivisection attempt to show why it should be continued. The arguments for and against can get confusing, so before we start getting into the debate, let's look at the facts and figures.

How many experiments are carried out?

In the United Kingdom, just under three million experiments are carried out on animals each year. According to government figures, 2,716,587 'procedures' (a politically-correct term for 'experiments') were performed in 1996. Over the last 18 years, the annual number of experiments has decreased by two and a half million.

What are the experiments for?

The animal experiments were carried out for the following reasons:

- \* Developing treatments for new diseases 43%
  
- \* Biological and medical research 32%
  
- \* Safety testing (less than 0.2% on cosmetics) 8%

\* Animals bred with an inherited genetic defect for medical research 14%

\* Developing new methods of diagnosis 2%

Which animals are used in research?

Using figures provided by the Home Office (1996), it is possible to be fairly precise as to how many procedures were performed on each type of animal:

Rats, mice and other rodents (bred for research) 85% (2,309,099 experiments)

Fish, birds, amphibians and reptiles 10% (271,659 experiments)

Small mammals other than rodents mainly rabbits and ferrets 2.2% (59,765 experiments)

Sheep, cows, pigs and other large mammals 2.2% (59,765 experiments)

Dogs and cats (bred for research) 0.4% (10,866 experiments)

Monkeys such as marmosets and macaques 0.2% (5,433 experiments)

Presumably in most cases, animals which have been used for one experiment cannot be used for any others because of the polluting effects of the substances they are testing. It is likely that these animals will be disposed of.

Who funds the experiments?

According to 'Uncaged', an anti-vivisection group, 52% of these experiments are funded by commercial concerns. A further 29% of funding comes from universities, but universities get most of their research funding from commercial concerns. Therefore most of the money for research comes from commercial sources - mainly in the medical and industrial sectors. The pharmaceutical industry is now the largest in the world. Popular drugs can be huge money earners, with big-sellers like aspirin earning over one million dollars per day in sales. 20,000 tonnes of aspirin are consumed each year in the USA alone. This is equivalent to 225 tablets per inhabitant.

Who checks that the experiments are necessary and carried out properly?

Testing on laboratory animals is regulated in the UK by the Animals (Scientific Procedures) Act 1986. The Animals Procedures Committee was set up by the Act and is in charge of deciding whether experiments should take place or not. However, the Committee of 21 inspectors has to supervise 2.71 million experiments carried out by 5,600 vivisectioners throughout the country, so in reality, it would be fairly easy to abuse the system, if an experimenter felt it was in his/her best interests to do so.

What do experiments on animals prove?



Many animal experiments are performed to highlight any potentially harmful effects of newly-developed medicines and chemical substances on humans. In some cases, researchers try to mimic conditions affecting humans (e.g. cancer, cystic fibrosis, arthritis, etc.) in the animals they are experimenting on, to see if new medicines will be effective in treating them. The Research Defence Society (a pro-vivisection organisation) claims that inherited diseases such as cystic fibrosis are now being accurately reproduced in specially bred genetically altered laboratory mice.

The above are the facts. They say what is actually happening in this country (and in America). What follows can be seen as the arguments put forward by people with completely opposing views. The anti-vivisectionists claim that vivisection is outdated, unnecessary, cruel, and produces misleading results. Pro-vivisectionists say that animal experiments are vital to the advancement of medicine, that care is taken to limit the suffering inflicted on animals and that vivisection is the only accurate way to test responses of entire living organisms to chemicals, rather than those of an isolated section of body tissue.

## The Arguments

One of the most serious arguments against animal testing is that the results obtained from experiments on animals do not accurately show the effects of a tested substance on humans. Professor Pietro Croce, an Italian, was a vivisector for many years, and now campaigns against animal testing. Amongst the examples he gives of animals giving misleading results when compared with humans are:

Parsley is a deadly poison for parrots.

Arsenic, a poison to humans is harmless to the sheep. Sheep, goats, horses and mice can also eat hemlock in huge quantities - whereas it is a poison to humans.

Lemon juice is poisonous to cats.

A hedgehog can eat enough opium at one sitting to keep a hardened drug addict high for a fortnight.

Morphine is an anaesthetic for humans, yet if it is given to cats, it produces a state of frenzied excitement.

Vitamin C is not needed at all by dogs, rats, hamsters and mice, as their bodies produce Vitamin C of their own accord. If humans, primates or guinea-pigs are deprived of Vitamin C, they will die of scurvy.

Simply inhaling the fumes of prussic acid is enough to kill humans, yet it can be drunk without harm by toads, sheep and hedgehogs.

Scopolamine can kill humans with a dose of just 5 milligrams. Dogs and cats find 100 milligrams harmless. This is very worrying when it comes to working out safe dosages, as it is calculated by looking at the relationship between body mass and dosage. If we take the average cat to weigh 4 kilograms and the average human to weigh 70 kilograms, this means the correct dose of scopolamine for a human would be 1800 milligrams - 360 times the actual safe dose.

Penicillin, the first antibiotic, was tested on mice. Had it been tested on guinea pigs, it would have been considered dangerous, as penicillin affects the floral bacteria in guinea pigs' stomachs, and kills them within a few days.

Professor Croce argues that to obtain the result you want from an animal test, you just have to choose the species to carry out the tests on. In this way, health warnings on cigarette packets were held up for years during the 1960's whilst scientists (paid by tobacco companies) proved time and again that smoking cigarettes does not cause lung cancer in rats and mice, despite the fact that by that time, there was already plenty of documented human evidence to show that cigarettes were dangerous!

The unreliability of animal testing was shown to disastrous effect in the case of fialuridine. This drug passed its animal test phase with no problems, but when it was given to fifteen volunteer humans, it caused acute liver damage, killing five of them and forcing two others to have liver transplants. However, this kind of problem is very rare, and must not be seen as representative of all animal testing.

The Medical Research Modernization Committee (MRMC), an American organisation for doctors who are against animal testing, states that vivisection makes it easy for scientists to quickly come up with 'new' and

'exciting' research. All they have to do is take existing data and change the animal species being experimented on to produce a different result. This allows researchers to publish their findings regularly, and enables them to find funding for future research. Frequently though, these experiments produce no data useful to the advance of human medicine.

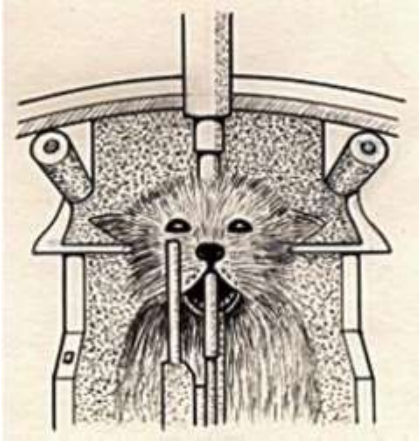
The MRMC also suggests that trying to learn about treating diseases such as cancer and AIDS using animal testing is a waste of time and money. They claim that since 1971, when the National Cancer Act was passed in the US, billions of dollars have been spent on possible cancer cures, but have yielded little in the way of new treatments. A major reason for this, MRMC suggests, is that cancers in animals develop and progress in very different ways to cancers in humans. In 1986, two time Nobel prize winner Linus Pauling wrote

"Everyone should know that most cancer research is largely a fraud, and that the major cancer research organisations are derelict in their duties to the people who support them."

AIDS research in America has also been unproductive, say the MRMC. Animals infected with HIV have failed to develop symptoms similar to those caused by AIDS in humans. Over a ten year period, more than 100 chimpanzees (our closest living relatives) have been infected with HIV. Only two have become ill. The same report goes on to suggest that AIDS may have been caused by vivisection, with monkey viruses being mutated to form HIV whilst producing a polio vaccine from baboon tissue. It is certainly true that 15 laboratory workers in the US have been killed by the Marburg virus and other monkey viruses, and that there have been two outbreaks of ebola in US monkey colonies.

The above is just a small proportion of the evidence and information to be obtained to back up the allegation that animals are unlike humans and should therefore not be used to predict human reactions to new treatments and medicines.

The Research Defence Society (RDS) is a British organisation set up to defend animal testing. It claims that most of the accusations made against vivisection are inaccurate, and that animal testing produces valuable information about how new drugs react inside a living body. Tests are carried out to identify major undesirable effects such as liver damage, raised blood pressure, nerve damage or damage to the foetus. It says that drugs can be altered by digestion, and become either less effective or more toxic, and that such problems cannot be investigated using cell samples in test tubes. Uncaged, MRMC and Professor Croce all argue that in vitro (test tube) experiments are at least as accurate and often more accurate than animal tests.



Albino rabbits are commonly used in the Draize tests, which check for eye irritation. The rabbits are chosen for these tests not because their eyes are similar to human eyes, but because they are cheap to obtain, are unlikely to bite their handlers and have relatively large eyes which are easy to observe. Rabbits have different eyelid and cornea structure to humans, and are less able to produce tears, making the Draize tests unreliable in predicting human toxicity.

All mammals, says the RDS, have the same organs as humans, performing the same functions and controlled by the same mechanisms. It claims that differences between animals and humans could lead to exciting new developments. For example, a mouse with muscular dystrophy suffers less muscle wasting than a human patient. If we could find out why, we could discover a treatment for the disorder.

Some animal hormones have been used successfully in humans. They include insulin from the pancreas of pigs and cows and thyrotropin from the pituitary glands of cows. Charles Cornelius, a veterinary surgeon, has compiled a list of 350 animal diseases which are very similar to human diseases.

The evidence that the RDS uses to back up its case does not really address the issues. Instead, it says that after animal testing, any new drug is tested on 3-5,000 human volunteers, and that if any side effect shows up only after a drug has been put on the market, it cannot be blamed on animal testing. It says that there are

2,000 types of drug available in this country. Uncaged suggests there are 20,000, most of which are slight variations on a theme. The World Health Organisation has stated that there are just 268 drugs which are essential to human health. What are all the others?

RDS claims that less than 40 drugs have been withdrawn from the market because of adverse side effects in the UK, US, France and Germany since 1961, and of these, only 10 have been withdrawn in all four countries. Professor Croce however claims that from 1972 to June 1983, 22,621 medicinal preparations had their registrations revoked. He obtained his figures from the Italian Ministry of Health's Drug Information Bulletin. He also states that all of these potential medicines must have passed their animal test stage in order to have been granted a registration. It could be that Italian drug testing procedures are less stringent than English, American, French and German ones, but it seems likely that in these countries, many drugs pass their animal testing phase and only fail to be marketed because subsequent tests on humans reveal side effects not indicated by the animal tests. The number is likely to be in the thousands, as in Italy, but it is not in RDS's interest to report this, so we have no clear figure available. Clearly, there are different ways of telling the 'truth', which involve the statistics you choose to publish. None of the above figures are incorrect. They simply tell very different sides of the same story.

According to RDS, alternative testing methods, such as in vitro testing, computer modelling and studies of patients and populations are already extensively used. In fact, it claims that only five pence in every pound spent on medical research goes on animal studies. It says that 'alternative' methods are not really alternatives at all. It believes that there are no alternatives to animal testing, as it is important to know how different systems within the body interact. Tests on animals are there to ensure that no obviously poisonous substances are tested on human volunteers. Professor Croce's evidence suggests that animal testing is not the safeguard that the RDS claims it is, and that very many new drugs, whilst not directly harmful, are also ineffective as cures.

Animal testing is used as a defence by the manufacturers not only of drugs, but of household cleaners and other everyday substances. If a product has been tested on animals, it can be used as a defence if it causes harm to people. For example, in America, artificial sweeteners like Sweet 'N Low carry the warning "Use of this product may be hazardous to your health. This product contains saccharin which has been determined to cause cancer in laboratory animals." The laboratory animals in question were rats which were given saccharin in doses equivalent in human terms to 800 - 1000 cans of soft drink per day for life! Overdosing on anything is likely to produce serious harm or even death, so what does this kind of test prove? It turned out that male rats had a chemical in their bodies which caused the saccharin to crystallise in their bladders, irritating them and causing bladder cancers. Female rats were less likely to suffer the cancers, as they had less of the chemical in their bodies. However this test did nothing to show the potential dangers to humans, who do not have the same chemical present in their bodies anyway.

Other examples of highly unpleasant testing are the LD50, LD100 and Draize eye tests. LD50 is the test to show how much of a substance it takes to kill 50% of the animals being tested. LD100 finds the dosage level

at which all the tested animals die. Needless to say, the 50% of animals which do not die in LD50 testing must suffer terribly from the effects of a substance which has killed the other 50%.

Clearly, many animal experiments are cruel and unnecessary, but there are also many examples of animal experimentation which have caused great advances in human medicine. Just one example is the case of diabetes. In 1889, two scientists, von Mering and Minkowski showed that removing a dog's pancreas produced diabetes. This showed for the first time that the pancreas was responsible for regulating blood sugar.

In 1921, two Canadian scientists, Banting and Best attempted to produce insulin and showed that giving insulin to a dog that had had its pancreas removed helped lower its blood sugar. Before long, James Collip, a biochemist, had extracted insulin from beef pancreas which was pure enough to be able to treat diabetic patients. He needed to find out what concentration of insulin to use, and used rabbits to carry out his tests. His extracts were used successfully in dogs and humans in 1922. The results were described by the British Medical Journal as "a magnificent contribution to the treatment of diabetes". In Britain today, there are around 300,000 diabetics who have to inject insulin and worldwide there could be as many as 30 million. A better advertisement for animal testing would be difficult to find.

A Conclusion?

Many animal experiments are cruel, painful, and seem unnecessary. Yet many of them are extremely beneficial to humans. In a country in which millions of animals are killed every week to feed and clothe us, can we really be too critical of experiments which may lead to exciting new discoveries? Is it fair to wave the finger at the vivisectionist from over our Sunday roast?

Clearly, there are some very bad vivisectionists who do not care about the suffering they are inflicting on the animals they experiment on. Indeed, it would be almost impossible to do the job of a vivisectionist if you cared too much about the animals you were performing experiments on.

However, exciting discoveries are still made by vivisectionists, which are beneficial to humans, and there are many people who are suffering from diseases and live in hope of a cure being found for them through animal

testing.

Do animals need to be sacrificed in order to test new cosmetics? Don't we have enough cosmetic ingredients available already? Yet if you are buying cosmetics without checking whether they have been tested on animals, then you could be guilty of encouraging further tests to be carried out.

Better regulation of animal testing is clearly the key. The Animals (Scientific Procedures) Act 1986 is described by the Home Office as "widely viewed as the most rigorous piece of legislation of its type in the world." Yet it was still possible for over 40 hours of incriminating video-tape to be shot secretly by an animal rights activist in the laboratory of Professor Wilhelm Feldberg, a researcher licenced by the Animal Procedures Committee.

The animal rights activists and vivisectionists should work together to ensure that only sensible, productive experiments are carried out. Steps should be taken to stop pharmaceutical companies from developing "copycat" medicines (ones which vary only slightly in formula from a successful drug already produced by another company).

You cannot say that all tests carried out on animals are wrong, especially if you eat meat or wear leather shoes and clothing but at the same time it is impossible to condone the many senseless, repetitive studies carried out on substances and medicines which we don't really need anyway.

This factsheet has only been able to look at some of the information available. To form your own opinion, you would be advised to equip yourself with as much information from both sides of the argument as possible. Read them carefully, then make up your own mind. There is a list of addresses to write to below.

Addresses to write to:

Advocates for Animals, 10 Queensferry Street, Edinburgh, EH2 4PG.

Animals in Medicines Research Information Centre (AMRIC),

12 Whitehall, London, SW1A 2DY.

British Union for the Abolition of Vivisection (BUAV),

16a Crane Grove, London, N7 8LB.

Fund for the Replacement of Animals in Medical Experiments (FRAME),

Russell & Burch House, 96-98 North Sherwood Street, Nottingham, NG1 4EE

National Anti-Vivisection Society (NAVS),

261 Goldhawk Road, London, W12 9PE.

Research Defence Society (RDS),

50 Great Marlborough Street, London, W1V 1DD.

Research for Health Charities Group,

PO Box 1417, Shepton Mallet, Somerset, BA4 4YZ.

Royal Society for the Prevention of Cruelty to Animals (RSPCA),

The Causeway, Horsham, West Sussex, RH12 1HG.

Seriously Ill for Medical Research,

PO Box 504, Dunstable, Bedfordshire, LU6 2LU.

You could also try the following web sites:

Home Office: [www.homeoffice.gov.uk/asfaf.htm](http://www.homeoffice.gov.uk/asfaf.htm)

Research Defence Council (RDS): [www.rds-online.org.uk/home](http://www.rds-online.org.uk/home)

Uncaged: [www.envirolink.org/arrs/uncaged/about.html](http://www.envirolink.org/arrs/uncaged/about.html)

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