Draize Eye Irritancy Test Rabbits

The Draize Animal Test Procedure

Household products, shampoos, pesticides, weed killers, even riot control gases, are just some of the products tested for irritancy in the eyes of conscious rabbits. The Draize test, introduced in 1944, is cruelly simple. The substance under test is sprayed or instilled into one eye of an albino rabbit. Generally no pain relief is given and the test often proceeds for 7 days during which the cornea, iris and conjunctivae are examined for signs of opacity, ulceration, haemorrhage, redness, swelling and discharge.

It is sometimes said that the test is stopped when signs of damage are observed. But this will depend on the type of substance under test, and also the vigilance of the laboratory. Test chemicals can be classified into two groups - those which are designed to come into contact with the eye and should not therefore cause any eye irritation (contact lens solution for example), and those which might be expected to produce damage from accidental exposure (household products, pesticides, weed killers, dandruff shampoos, detergents and many industrial chemicals) but which are nevertheless considered commercially important. In the latter case, signs of damage in the rabbit's eye would be monitored over several days to see if they healed or deteriorated. After all, a stated purpose of the Draize test is not only to discover the type and severity of damage caused by the chemical under investigation, but also the time of onset, duration and possible resolution of any injuries or inflammation, and whether the damaged tissues ever return to normal. Consequently, tests might be increasingly painful should the injuries deteriorate.

Ethical objections aside, the very least one might expect from such a distressing procedure is that the results safeguard the public. However, the test has often been condemned on scientific grounds because it produces unreliable results which can bear little relation to human responses.

Scientific Limitations Draize Animal Rabbit Test

The rabbit is most commonly used in eye irritancy tests, probably because it is cheap, easy to handle and has a large eye for assessing results. But there are serious differences which make the rabbit eye a bad model for the human eye. These include the following:

1. Unlike man, the rabbit has a nictitating membrane, or third eyelid. It could be argued that this removes irritants from the eye, or, on the other hand, serves as a trap for material beneath it.

2. The rabbit produces tears less effectively than people, so differences in the degree and duration of contact of an irritant can be expected. This may affect test results.

3. The acidity (pH) and buffering capacity of the aqueous humour in the eyes of human beings and rabbits are different In humans, the pH is 7-1 - 7-3 whilst in rabbits it is 8-2. It is thought this difference might explain the particular susceptibility of the rabbit iris to chemical inflammation.

4. The thickness, tissue structure and biochemistry of the rabbit and human cornea are different. The thickness of the cornea in man is 0-51 mm and 0-37 mm in rabbits.

It is hardly surprising that the Draize test on animals can give misleading results.

Interlaboratory Variation Animal Testing Research

Another major problem is that results for the same chemicals can vary widely from laboratory to laboratory, and indeed within the same laboratory because of the subjective nature of assessing the test results.

The assessment of eye irritation is basically subjective and it is not surprising that the literature abounds in results showing different inter- and intra-laboratory values.

What is classed as a severe eye irritant by one scientist may be dismissed as a mild irritant by another:

The fact that the Draize eye irritancy test on animals has been in routine use for over 65 years and has become enshrined in regulatory guidelines, should not mask its lack of scientific credibility. At best it can crudely distinguish highly irritant chemicals from those of lower irritancy, for the species under investigation, but cannot grade them accurately.

Some of the difficulties described above have led scientists to investigate non-human primates as a replacement for rabbits in eye irritation studies. But there can still be species' variations, apart from ethical considerations. Many primates are captured in the wild and transported and conditioned to laboratory life, all of which can cause very great stress and a high mortality. Ultimately their greater cost, the extra difficulties in handling, and the increasing public hostility to animal experiments may

provide the best protection for non-human primates against routine use in eye irritation tests.

In any case, replacing one species by another does not tackle the fundamental ethical problems, and there will still be scientific difficulties.

Conclusions Rabbit Draize Eye Test

1. The Draize eye irritancy test on animals must often involve considerable suffering, not only because of the types of chemicals tested, but also because of the way the procedure is carried out. Injuries are monitored over several days to see if they deteriorate or heal and no pain relief is given.

2. The rabbit eye is structurally and physiologically different to the human eye so results may bear little relation to human responses. The test cannot therefore be said to provide adequate protection.

3. Alternative tests can successfully distinguish between substances of severe, moderate and low or non-irritating potential, and The International Association Against Painful Experiments on Animals believes the use of living animals in eye irritancy tests should be totally prohibited.