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Primary uses of animals in research

Chetna Badyal*

Department of Pharmacology, Allam Medical College and Hospital, Ahmedabad, Gujarat, India.

BACKGROUND

Animals are used and are still permitted for screening for drugs, in bioassay and for preclinical testing including general and specific toxicity studies. This preclinical safety and efficacy data is required for submission to drug regulatory authorities before the permission for further studies in humans are granted.

A larger number and a greater sort of animals are utilized in pure research than in applied research. This usually involves studies on embryogenesis, developmental biology, behavior and breeding in Fruit flies, nematodes, mice and rats. Applied research that aims to answer specific questions is typically administered within the pharmaceutical industry or by universities. Animal models of disease, discovered or generated by pure research programs, are used for applied research. Examples include use of transgenic animals, animal models of present diseases, and induced animal models of human diseases, cosmetic testing and toxicity studies.

Cosmetic testing on animals is especially controversial and involves general toxicity, eye and skin irritancy, photo toxicity and mutagenicity. The famed cosmetics giant L'Oréal, had said it might respect the ban and "no longer sell in Europe any finished product with an ingredient that was tested on animals". A cosmetic testing is banned in many countries, including Netherlands, Belgium and therefore the UK. The ecu Union (EU) approved a near-total ban on the sale of animal-tested cosmetics from 2009. However, companies were allowed the sale of animal-tested products if the tests were conducted elsewhere.

Cosmetics tested on animals cannot be sold in Europe, albeit the testing was done outside Europe. Since then major companies have completely stopped testing of cosmetics in animals. Necessity being the mother of invention, superior, cheaper and simpler non-animal methods has been developed for this purpose.

Preclinical toxicology tests use a million animals per annum in Europe, which are about 10% of all procedures. For every chemical test, approximately 5000 animals are used. The foremost stringent tests are reserved for drugs and food. variety of tests are performed, lasting but a month to years to check general toxicity, eye and skin irritancy, mutagenicity, carcinogenicity and teratogenicity. These toxicity tests provide critical information for assessing hazard and risk potential. The utility of toxicity tests is however debated, since many animal toxicity tests don't accurately reflect toxicity in humans, with false positive results being a specific problem. Alternatively, false negative tests, as within the case of thalidomide toxicity in rodents also are observed.

Poor reproducibility of Draize test in rabbits, poor extrapolation of safety of acetyl 2-hydroxybenzoic acid, citalopram and recombinant antibodies from animals to humans are other examples that validate this fact. To feature to the present, withdrawal and ban of variety of medicine in recent years including rofecoxib, which was proven safe in animal testing highlight these legitimate concerns about extrapolation of animal test results to citizenry. Data from acute tests may meet classification and labeling regulations, but could also be of limited value for hazard and risk assessment. Also, high doses of chemicals are utilized in a little number of laboratory animals to predict the consequences of low doses in sizable amount of humans.

Hence, opinion is split on the way to use this data during a meaningful manner.

Rodents (rats, mice) and non-rodents (rabbits) are usually utilized in these toxicity studies. International variation in testing requirements may result in duplication in toxicity testing. for instance , within the ecu Union, the local lymph gland assay (LLNA) is that the preferred method for assessing skin sensitization potential, whereas guinea pig assays are still preferred in other regions of the planet e.g., China. Considering the above facts, it's suggested that International uniform protocols be implemented so on reduce the amount of animals used, if not totally ban the toxicity tests.