

THE SUCCESS OF THE CONCEPT OF THE 4TH R: A NEW ERA IN LABORATORY ANIMAL CARE



THE 4TH R-“REHABILITATION” OF LABORATORY ANIMALS

The concept of 4th R “Rehabilitation” of laboratory animals is defined as “the after care rendered to animals that have been (i) bred for the purpose of experimentation (ii) subject to any form of experimentation (iii) retained in laboratory animal houses or breeding houses for the purpose of experimentation, both for education and research, with the sole purpose of alleviating the pain or suffering due to the physical and psychological trauma that the animals have been exposed to and to prolong the life of the animals until the point of natural death”.

THEY CANNOT GO FROM THE CAGE TO THE GARDEN

When animals are rehabilitated from laboratories they cannot be immediately exposed to natural situations/incitements. Such situations could be life threatening. Rabbits can die of cardiac problems, rodents can develop aggressive instincts and kill each other, dogs can develop catatonic attitudes, obsessive and compulsive disorders, fear, aggression, horses tend to over exert themselves after having lived a close to sedentary life, primates show varying symptoms of aggression or withdrawal, over eating etc.

THE INDIAN SCENARIO

In 1960, the Prevention of Cruelty to Animals Act was promulgated by an act of the Indian Parliament. Section 15 of the Act provides for the constitution, by the Government of India, the Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA).

For over three decades since the first CPCSEA was constituted in 1964, very little was done to relieve the suffering of laboratory animals in India. In 2000 an active secretariat of the CPCSEA was created to proactively enforce the law and hundreds of animals, which were found in laboratories in acute stages of physiological and psychological trauma, were rehabilitated

THE ANIMALS: WHICH, WHERE, HOW

The rehabilitated animals included cases of non-human primates languishing in cages for 20 years, showing signs of self-mutilation and muscle atrophy; beagles with congenital defects due to inbreeding; and equines that were old, blind and lame, and being bled 18-20 litres of blood every month.

People for Animals (PFA), India’s largest animal welfare organisation helped the CPCSEA in its rescue endeavours. In 2004 the CPCSEA constituted a consultative group of scientists, representatives of the health and environment ministries, funding agencies, national research councils, philosophers and animal activists to elucidate the un-

derlying principles of animal experimentation and their philosophical foundations to help provide the conceptual framework to review the existing norms and in the promulgation of new ones and for the first time in the world, a nation will now legally impose the concept of the 4th R, binding on all research/scientific personnel using animals for experimentation. The guidelines of the CPCSEA, Govt. of India, of September 2004, states that “personnel using experimental animals have a moral responsibility for the animals after their use and investigators are responsible for the after-care and/or rehabilitation of animals post-experimentation”.

- Animals, especially pups, coming from teratogenic studies (observation of possible damages during the pregnancy) which did not succumb to toxic effects.

Animal welfare personnel observed that the behavioral problems are an outcome of inbreeding and caging/stabling and have been observed in even in animals that have not been experimented upon. Information on the duration of caging, degree of social interaction with other members of the species, environment enrichment, quality of human interaction, size of cage, degree of invasiveness of the studies conducted on the animal, repetitive use of the animal if any, kind of experiment subjected to, toxicity of substances injected/ fed/applied etc. are crucial to understand and assess the degree of psychological and physiological damage in the animal.

- Animals released on termination of a specific study/project/experiment or in the instance of closure of a company/industry.
- Animals rescued from laboratories because of legal irregularities.
- Animals involved in non terminal studies.
- Animals involved in behavioural and ethological studies.
- Animals surrendered on adoption of non animal experimental techniques.

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SUMMARY

The concept of the 4th R “Rehabilitation” of laboratory animals is best described as a continuum of Three Rs credo, in keeping with the spirit and philosophy of the founders of this doctrine, Russell and Burch. Borne from the philosophy and belief in “Ahimsa”, the concept of the 4thR is today elaborated in the guidelines of the CPCSEA (Committee for the Purpose of Control and Supervision of Experiments on Animals), Govt. of India and is a new law proposal with the Govt. of Italy. In countries like Italy and Switzerland the concept of 4th R is grown out of several years of arduous effort of both scientific and animal welfare personnel.

The guidelines of the CPCSEA, Govt. of India, states that “personnel using experimental animals have a moral responsibility for the animals after their use and investigators are responsible for the aftercare and/or rehabilitation of animals post-experimentation”. The International Centre for Alternatives in Research and Education (I-CARE) seeks to blend the philosophy of “ Ahimsa” with “Science” and in this , the centre will proactively work to propagate the credo of 4Rs. The paper discusses the methodologies adopted in the rehabilitation of primates, equines, dogs, cats , rodents and rabbits and the need and possibilities to universalize and legitimize the concept of rehabilitation at both scientific and judicial levels across the world.

Number of animals rehabilitated in India, Italy and Switzerland in the last 5 years

Animal Species	India	Italy	Switzerland
Non Human Primates (Bonnet, Rhesus, Langurs)	235		
Cats		13	3
Dogs	Beagles -277 Mixed breed- 53	121	
Equines	Horses and mules -184		
Sheeps	33		
Rabbits	110	342	41
Snakes	5		
Poultry	124		
Mice	>40	682	21
Rats	45	220	9
Gerbils		250	
Guinea Pigs		15	
Hamsters		42	
Frogs	> 60		
Birds	Quails >90		



RODENTS

In rehabilitating rats and mice the main aim is to make the kind of imprisonment that they inevitably destined to, in the least, less distressful.

It is observed that when they move from the sterile, bland laboratory cage to a den or a enclosure with some degree of freedom and natural incitements/stimuli, male groups which lived in perfect harmony in laboratory cages, suddenly begin to exhibit aggressive instincts and could even kill each other. In order to prevent group break up and or any modification in-group composition, large cages must be used with several dens to minimize competition. Enrichment should also include provision of nest building material that allows them to take time to build their own nests and contraptions that allow them to search and find their food.

RABBITS

New Zealand rabbits are very sensitive to caging and stabling conditions. They often succumb to spinal chord damage even if they have not been experimented on, because of the small dimension of the cages that they are restrained in for long periods of time in laboratories allowing no freedom of movement. Often this damage results in the paralysis of the hind legs. Rehabilitation of rabbits has to be done remembering that rabbits are delicate and sensitive animals that cannot be directly rehabilitated in a natural environment with too

many incitements as this could lead to cardiac arrest. Dimensions of the enclosures that they are rehabilitated in should be increased gradually, so as to prevent them from over activity, even before they fully recover they muscular strength and normal limb mobility.

DOGS AND CATS

Rehabilitation of cats and dogs would almost always need the support of technical personnel, veterinarians, behaviourists and animal welfare personnel. It was observed that behaviour problems if any, have been observed in dogs and cats even before they are subject to any experiment, and hence is attributed to the modalities of breeding and caging besides the effect of the experiment itself.

The time taken for individual animals to be re-educated varied from animal to animal. Before they were given to homes they were first allowed freedom of movement, walks and some degree of social interaction with other cats or dogs, as the case may be, in animal shelters.

NON HUMAN PRIMATES

Non-human primates rehabilitated were mainly bonnet and rhesus macaques and a few langurs. In the case of primates the degree of confinement/restraint and duration of caging were observed to have the most compelling negative impact on the behaviour of the animal. Muscular dystrophy of hind limbs and stereotypies were most common in those who

were caged for several years. Yet others, in acute cases, showed self-mutilation and in less acute cases, showed stress induced freckles. Bouts of aggression and violent behaviour were common in males.

Freedom, space and social interaction with other members of their species was found to most important and critical for their recovery. Enrichment by way of provision of swings and trees was important to “re-educate” them to a natural way of life.

EQUINES

Equines that were rehabilitated were from anti snake venom serum (ASVS) producing laboratories. The most compelling and obvious observation was their limp and anaemic bodies due to the constant physiological stress that their bodies were subject to. Phlebitis, Amyloidosis, Equine Recurrent Uveitis (ERU) and liver dysfunction were commonly observed and characteristic of animals used in the production of hyper immune sera.

Single stabling almost always aggravated the situation and keeping them in herds/groups was found to be useful and the animals were found to be happier, more active and showed a better appetite. It is recommended that the diet for such animals should include high quality protein, alfalfa grass (Lucerne sp.), indigenous dry grass, amino supplements of isoleucine, valine and methionine and vitamin E and B supplements.

CONCLUSIONS

The International Centre for Alternatives in Research and Education (I-CARE), will focus on the 4th R and proactively work to propagate, universalise and legitimize the concept of rehabilitation. I-CARE will work:

- To network with institutes/rehabilitation centres worldwide that invest time and effort in the care of rehabilitated laboratory animals.
- To encourage, support and conduct behavioural/ethological studies on rehabilitated

animals in order to study the physiological and psychological impact on experimented and caged animals.

- To contribute to the diffusion of information on the possibilities and the methodologies of the rehabilitation.

