Background

When animals are moved into a new area or transported, even over short distances, they experience a period of stress that may impact their welfare and experimental outcomes.

It has been proven that the immune system, neuro-endocrine system and many physiological parameters can be impacted in the short term. These can affect short-term responses to experimental drugs or other interventions.

It is recommended that animals are provided with sufficient time to acclimatise to their new environment and recover from the stress of transport. The period of time recommended for acclimatisation and return of homeostasis to occur is related to the length of transportation and the magnitude of differences between the origin environment and the destination.

General Information and Considerations

The stress to the individual animal may be caused by changes in temperature, equilibrium, vibration and sense of movement, lighting, airflow, and reduced oxygen availability. Separation from cage mates, reduction in availability of water from normal sources, unusual noises and a new cage environment amongst may also be sources of stress.

Scientific evidence shows there are physiological changes that affect plasma cortisol levels, white blood cell activity, haemagglutination parameters, and reproductive performance and body weight may be negatively affected.

The gut microbiome may also vary significantly between animal facilities and it may be that phenotypes and experimental parameters are difficult to replicate once animals are moved between different facilities, depending on the barrier conditions, bedding and changes to diet.

The age, genotype, health status and animal's potential previous exposure to the stress of transport will lead to a variation in the animal's response and should all be considered when assessing potential impact.

It is important that research groups undertake their own research to determine how transport and change in environment may affect animals in their studies and appropriately time the transport of their animals with the expected start date of experiments.
Monitoring, Intervention and Reporting

Animals must be fully examined post arrival at a new facility (either post import or transport from another facility). This examination should include:

- Assessing animal welfare
- Confirming the sex, strain, appearance and age of the animals as per the order record and labelling on the shipper
- Cross checking the delivery information with the animal(s) received
- Confirming the availability of food and water once the animal is housed in its new cage

Rodents must be monitored daily post transport. This monitoring does not require a specific score sheet unless there are any abnormalities noted at any stage.

Any animal deaths or other welfare concerns arising during transport must be reported as an Unexpected Adverse Event as per the ANU’s procedure.

Minimum Requirements

Even for non-survival experiments, the impact from the stress of transport and change in environment needs to be considered for all animal based work.

Each day of acclimatisation should be an entire day of rest. For example, if one day acclimatisation is recommended, then an animal that arrives at a facility on a Tuesday should not be utilised until the Thursday to allow for the Wednesday to be a full one day acclimatisation period.

For animals transported from one facility on campus to another nearby facility the ANU recommends a minimum of one day acclimatisation.

For animals transported within Canberra but outside of the ANU campus the ANU recommends a minimum of three days acclimatisation.

For animals transported outside of Canberra but within Australia, the duration of the journey is likely to be many hours at a minimum and the ANU recommends a minimum of four days acclimatisation.

For animals transported overseas and by air freight, the ANU recommends a minimum of seven days acclimatisation.

To minimise the impact of movement between facilities at ANU and ACT Health animal facilities, the facilities should have similar temperature and humidity settings whenever possible as well as similar home cage environments.
Exceptions

In all circumstances research groups should make effort to meet the above recommendations. Where experiments must be undertaken in urgent circumstances or if the above recommendations cannot be met it is a requirement that the research group take into consideration the increased risk of variability of research results. It is not acceptable to risk animal welfare or research quality to be able to achieve quick research results. Any exceptions must be discussed with ANU veterinarians with consideration to welfare and research quality.

Minimising Stress

The transport of animals must be undertaken within the ANU Guidelines. These include the requirement to minimise stress to the animals by avoiding extremes in temperature, duration and mixing animals unfamiliar with each other, providing lower light levels, minimising unnecessary vibration and ensuring the animals are accompanied at all times.

In addition, habituating animals to the stresses of handling and transport from early life increases the speed of recovery from transport stress.

References and Resources


