

THE UNIVERSITY OF HONG KONG
COMMITTEE ON THE USE OF LIVE ANIMALS IN TEACHING & RESEARCH

Policy for the Social Housing of Rabbits

Purpose

The purpose of this document is to describe the requirements for the social housing of rabbits.

Background

Social housing of social species in stable pairs or groups of compatible individuals is the default method of housing. For details on social housing of social species, see Policy for the Social Housing of Social Species (M.44/1120).

Policy

Single housing of rabbits should be an exception and justified based on experimental requirements approved by the CULATR or veterinary related concerns on animal well-being (Guide, NRC, 2011), while taking into account that for rabbits of both sexes, developing and maintaining social hierarchy may entail antagonistic interactions between pair or group members resulting in superficial wounds or more serious injuries. Therefore, rabbits should be group housed where possible while also taking into consideration any potential consequences that may result from rabbits displaying both affiliative and aggressive species-typical natural social behaviour.

Procedure

- Rabbits will be housed in compatible pairs or groups, rather than individually, unless a single housing exemption due to experimental necessity has been approved in the relevant protocol or social housing poses an undue risk to the animals in question due to social incompatibility or veterinary concern.
- During nursing, does will be singly housed except for the time during nursing (i.e. 10-20 mins each day). Young rabbits below 4 weeks of age will be housed in the nursing box in the adjacent cage next to the doe until weaning age at around 4 weeks old.
- Animals of the same sex at 5 weeks old should be group-housed in harmonious social pairs/ groups after weaning according to the Recommended Stocking Density (Table 1; Annex 1). Singleton female rabbits from different litters should also be tested for social compatibility (Refer to the section Compatibility Co-Housing Trials below). When the animals are required to be transferred to the stock zone at 7 weeks old or to the Experimental area, they will be kept within the same social group if possible. When animals are transferring to the Experimental Area, the issue card should include any social compatibility status, and the recipient area staff should check the compatibility of the rabbits based on the remark on the delivery note. Any paired rabbits should still be observed closely at the beginning of co-housing for any dominance or aggressive behaviour due to change of environment (refer to the section on Compatibility Co-housing Trials below).
- Adult entire males (over 20 weeks of age) may show territorial behaviour and should be single housed and not be housed with other entire males. If any male rabbits are observed to be socially incompatible whilst co-housed, they shall be separated without any further attempt to co-house. Rabbits of the opposite sex should not be co-housed to avoid unnecessary breeding.
- Examples of approved single housing experimental necessity include operated animals, animals needing separation due to treatment needs, female rabbits pregnant at day 10 and onwards until parturition when they need to be put on the pregnancy diet.
- Where individuals cannot be group-housed, consideration should be given to housing them in contiguous cages with visual, olfactory, auditory and tactile contacts with nearby cage mates

whenever possible, together with the provision of at least one additional form of environmental enrichment to the individual.

- Watanabe Heritable Hyperlipidemic Myocardial Infarction (WHHLMI) rabbits have a phenotype that predisposes them to developing coronary atherosclerosis and a high risk of sudden death. During the co-housing process, there is often strenuous activity that will occur between the animals, such as chasing and running, which could potentially trigger an adverse cardiac event. Due to the risk of death, any singly housed WHHLMI rabbits are recommended not to undergo co-housing trials, and instead continue to be single housed due to this veterinary concern.

Compatibility Co-Housing Trials

In both breeding and experimental areas, compatible animals should be co-housed and reviewed from time to time on the well-being of the animals. The recommended stocking density for co-housed animals must also be observed (Annex 1).

Procedure

1. Rabbits should be properly identified by ear tattoo before the pairing. Animals that appear to be compatible will be permitted to have direct contact and interaction with each other. The two potentially compatible rabbits are introduced into a neutral (unfamiliar to both individuals) cage after feeding to reduce resource-related fighting. The pairing should be performed before 10am in the morning and at beginning of the week to allow time for close monitoring of the animals.
2. Enrichment treats (Bio-Serv, UK) or Papaya tablets (PMI, USA; one tablet each) can be offered to the two rabbits individually during the compatibility test.
3. Ensure there is ample amount of timothy hay in the cage before pairing.
4. The responsible staff member must remain in the room for the first hour following pairing of the rabbits. The animals must be observed closely after pairing for signs of aggressive behavior such as biting and chasing for at least 30min. The co-housed rabbits should be checked four times by the Technical staff on Day 1 (10am, 12 noon, 2:30pm and 4:30pm), three times (10am, 12 noon and 4pm) on Day 2, two times (9am and 4:30pm) on Day 3, during which observations are recorded daily in the "Monitoring Card for the Compatibility test for Rabbit Co-housing" (Annex 2).
5. If fighting is intractable or if wounds are sustained, the rabbits should be separated immediately.
6. If hostility or other signs of incompatibility is noted, animals should be identified as aggressive, submissive, or undetermined.
7. In SPFBA, perform compatibility trials again for all animals 1 week later. All repeat compatibility testing should be performed according to steps 1-6. If a rabbit is identified as the aggressor for two compatibility tests, then follow step 9.
8. In experimental areas, perform compatibility test again for submissive or undetermined animals 1 week later. Repeat compatibility testing should be performed according to steps 1 to 6. Animals identified as aggressive should not have repeat test, and should follow step 9 due to the aggressive tendencies as outlined in the AAALAC position statement.
9. If no compatible cage-mate can be identified for a particular animal(s) despite these attempts, it will be single-housed in contiguous cages with sufficient visual, auditory, olfactory and tactile contacts with nearby cage mates whenever possible, together with the provision of at least one additional form of environmental enrichment.
10. Minor injuries and wounds might occur during the process of pairing and social housing of rabbits. Minor injuries should be recorded on the orange "Sick Animal Observation/Treatment Card". Moderate to severe injuries should be monitored and recorded daily in the yellow "Sick Animal Observation/Treatment Card" with treatment given according to the advice of the Unit Veterinarian.

11. Whenever signs of incompatibility¹ occur, even among an established co-housed pair, the following procedures should be observed:
 - (a) Animals should be separated immediately.
 - (b) Perform physical examination, inform the CCMR Veterinarian if injuries are found.
 - (c) Record any injuries on the “Orange” or “Yellow” “Sick Animal Observation/Treatment Card” as appropriate.
 - (d) Complete the Monitoring Card for the Compatibility Test of Rabbit Co-Housing (Annex 2).
 - (e) Re-group or continue to separate the animals as deemed appropriate on the advice of the CCMR Veterinarian.
 - (f) The reason(s) for singly housed animals should be documented on the blue “Single House” Cage Card.

¹The following signs are suggestive of incompatibility:

- (i) Aggression: chasing, cornering, fighting, biting, thumping, urine spraying, presence of wounds or alopecia on the submissive rabbit.
 - (ii) Deterioration of body condition score due to restriction to resources (food and water).
12. Single-housed animals should be reviewed at the semi-annual CULATR meeting, and the Standard Operating Procedures for Co-housing is reviewed by CULATR during its “Semi-Annual Animal Care & Use Program Review”.

Reference

1. Guide for the Care and Use of Laboratory Animals, NRC, 2011
2. AAALAC Frequently Asked Questions and Position Statements, <http://www.aaalac.org>

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Table 1. Recommended Stocking Density for New Zealand White Rabbit

Age (Week)	Mean B.Wt. (Male) (kg)	Mean B.Wt. (Female) (kg)	Recommended Minimum Space*		Tecniplast Plastic Rabbit Cage				NKP Breeding Cage	
					R Type		4401S			
			Body Weight (kg)	Floor Area/Animal (m ²)	Single Cage	Two Combined Contiguous Cages	Single Cage	Two Combined Contiguous Cages	Single Cage	Contiguous Cages
5	1.06	0.98	<2 Up to 4 Up to 5.4	0.14 m ² 0.28 m ² 0.37 m ²	3	6	2	5	2	4
6	1.41	1.31			3	6	2	5	2	4
7	1.69	1.59			3	6	2	5	2	4
8	1.87	1.88			3	6	2	5	2	4
9	2.20	2.16			1	3	1	2	1	2
10	2.43	2.35			1	3	1	2	1	2
11	2.60	2.56			1	3	1	2	1	2
12	2.79	2.79			1	3	1	2	1	2
13	2.91	2.94			1	3	1	2	1	2
14	3.07	3.09			1	3	1	2	1	2
15	3.13	3.17			1	3	1	2	1	2
16	3.24	3.32			1	3	1	2	1	2
17	3.33	3.46			1	3	1	2	1	2
18	3.44	3.59			1	3	1	2	1	2
19	3.51	3.66			1	3	1	2	1	2
20	3.53	3.81			1	3	1	2	1	2

* Recommended Minimum Space according to "Guide for the Care and Use of Laboratory Animals 8th Edition, National Research Council, USA, 2011"

Monitoring Card for the Compatibility Test of Rabbit Co-Housing (CULATR no.: _____)

Sex	Rabbit ID	DOB	Conclusion							
<input type="checkbox"/> M	X		<input type="checkbox"/> Aggressive	<input type="checkbox"/> Submissive	<input type="checkbox"/> Undetermined					
<input type="checkbox"/> F	Y		<input type="checkbox"/> Aggressive	<input type="checkbox"/> Submissive	<input type="checkbox"/> Undetermined					
Observation: 1. Biting 2. Chasing 3. Fighting 4. Scratching 5. Thumping 6. Urine spraying 7. Wounds/ Alopecia on submissive rabbit 8. Occupancy pattern (a) stick together; (b) in close proximity; (c) occupy different corners 9. Other observation: _____										
Examples: <u>X1Y</u> - Animal (X) bites Animal (Y); <u>Y2X</u> - Animal (Y) chases Animal (X)										
Hour Date	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	Observer Signature