

# The Applicability of the OptiMICE® Cage System in a Toxicology Animal Facility

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## Abstract:

The OptiMICE® caging system has been developed by Animal Care Systems with the claim that they optimize space and enhance the quality of life for animals and their caregivers. Lab Products Inc. See-Through III caging is currently in use in our facility. Mice are single housed in a rack of 140 cages in 18 sq ft of floor space. The OptiMICE® rack can hold 200 single housed mice using a cage divider in 9 sq. ft of floor space. To determine whether this cage system is feasible for use in our Toxicology facility and whether the technicians can achieve similar dosing rates as the See-Through III cages, we designed two studies using the OptiMICE® caging system. For both studies, forty male and 40 female C57/BL6 mice were dosed with corn oil by oral gavage. The first study was a 28-day study in which the technicians knew they were being monitored for speed of dosing. The second was a 15-day blinded study which the technicians thought was an actual study. For the un-blinded study, animals were dosed with and without the help of a cage runner; the animals were also dosed while the cage feeders were in the cage and when they were removed 30 minutes before dosing. The dosing time was monitored each day of study and technician input on the efficiency of the caging system was noted. The results of the two studies showed that the presence of a cage runner greatly improves the time it took to dose all 80 animals. If a cage runner was not present, the time to dose all 80 animals was lengthened further if the meal feeders were not removed prior to dosing. However, with the help of a cage runner, there was no difference in the length of time needed to dose all animals whether the meal feeders were or were not removed before initiation of dosing. There were also no differences in the dosing times between the un-blinded (cage runner present) and blinded studies. Furthermore, as technicians became more familiarized with the new rack system, they became more efficient in dosing. The technicians noted that the OptiMICE® caging system reduced the odor significantly in the room but the animals were difficult to view. In conclusion, the OptiMICE® caging system optimizes space and reduces odor in the room. As technicians become familiarized with the system, standard dosing time for oral gavage will be reached with the OptiMICE® rack system.

## Objectives:

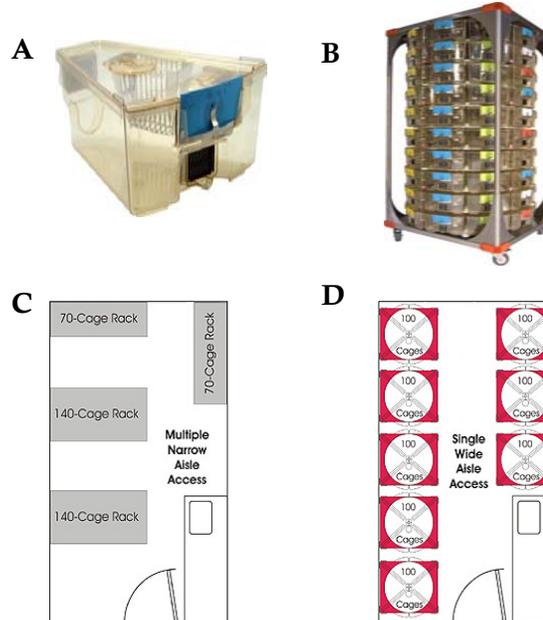
1. To investigate the effectiveness and ease of use of the OptiMICE® rack system in the animal facility.
2. To determine whether we can reach the standard dosing time (oral gavage) in our facility (6-8 animals/minute) using the OptiMICE® rack system

## Methods:

1. Forty male and 40 female C57/BL6 mice were individually housed in OptiMICE® cages that were separated by a cage divider (2/cage)
2. Two experiments were performed: one a 28-day study in which the technicians knew they were being monitored for speed of dosing, and one 15-day blinded study which the technicians thought was an actual study
3. Mice were dosed with corn oil by oral gavage (10 mL/kg)
4. For the un-blinded study, animals were dosed with and without the help of a cage runner (helped with cage removal and placement); the animals were also dosed while the cage feeders were in the cage and when they were removed 30 minutes before dosing
5. For the blinded study, animals were dosed with the help of a cage runner and only after the meal feeders were removed from the cages

## OptiMice Rack®: Features

- One-pass airflow, low velocity and total volume air change
- Optional automatic watering infrastructure built-in
- Available in 100-polycarbonate or clear polysulfone Cage Rack Cylindrical assemble
- Cylinders can be rotated using handles on each platter
- Light weight
- Claim to have the highest cage density in the industry and to be Noise, allergen, and odor free



A. OptiMICE Mouse Cage

B. OptiMICE Rack

C. See-Through III System Cage Density

D. OptiMICE Rack Cage Density

## Results

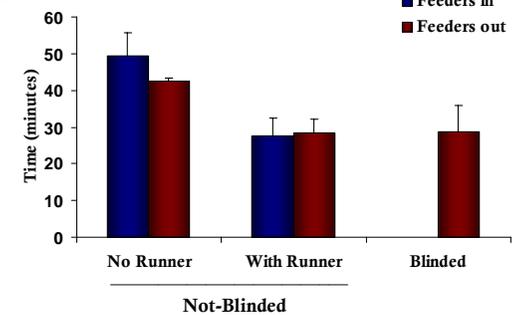


Figure 1. Oral Gavage Dosing Times. Average times among various technicians to dose 80 C57/BL6 mice (oral gavage). In the blinded study, technicians did not know they were being monitored for speed of dosing.

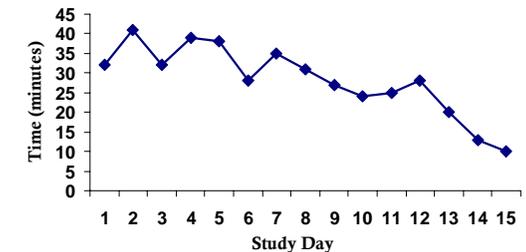


Figure 2. Oral Gavage Dosing Times in a 15-day blinded study. Times among various technicians to dose 80 C57/BL6 mice (oral gavage) with the help of a cage runner.

## Technician Testimonials:

- “Dosing time was normal if the cage runner was present, if not then dosing would have taken longer.”
- “Reduces the odor significantly in the room. Animals are hard to view due to the dimensions of the cage. Opening of each cage required in order to verify Mortality/Morbidity of study animals.”

## Conclusion:

The OptiMICE® rack system provides an easier rotation schedule, reduces odor in the room, and occupies half of the space than the See-Through III system. Using a divider in the cage doubles cage density. As technicians become more familiarized with the new rack system, they become more efficient in dosing. Standard dosing time for oral gavage can be reached with the OptiMICE® rack system

