

Modification of Metabolism Cages for Increased Efficiency

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A controlled-ventilation glass metabolism cage is an apparatus commonly used in excretion and distribution studies of labeled and unlabeled environmental toxicants, trace elements, and drugs. In studies of trace element metabolism by Vetter (1) and Weeks, et al. (2), poor efficiency of urine and feces separation was observed in several cages of a commonly-used model.^a Because of the necessity of a clean separation of urine and feces in meaningful metabolism studies, a simple modification of the cage was made and tested. This improvement may benefit others who are using this metabolism cage.

The separation of urine and feces in the Delmar cage is accomplished by allowing urine to flow along the outer surfaces of a separator section into a collecting bowl, while feces fall by gravity into a feces separator funnel. However, the present design does not provide an adequate space between the outer wall and the funnel for urine droplets to pass freely. Also hair and feed particles collect on the edge of the funnel, thus diverting urine into the feces container.

The modification to the separator section (Figure 1) involved lowering the feces separator funnel approximately 1/4-in. This was accomplished by heating and slightly elongating the outer wall of the separator. The space between the outer wall (A) and the upper edge of the separator funnel (B) should be approximately 1/4-in. If performed properly the modification does not structurally weaken the separator or change its shape appreciably.

^aModel DS 7005, Delmar 6-in. Metabolism Cage for Rats, Coleman Instruments, Maywood, Illinois, 60153.

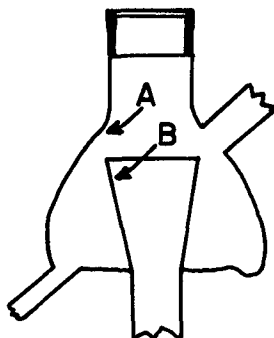


Figure 1. Modified separator section of Delmar metabolism cage.

The improved chamber has been tested and found to perform considerably more efficiently than the present design. No liquid appeared in the feces container during a period of 5 days in which a 250-g. rat was housed in the cage.

References

1. VETTER, R.J., "The Alteration of Selenium Metabolism in the Rat and the Effect of Selenium on Feed Intake of the Rat," Ph.D. thesis, Purdue University, Lafayette, Indiana, 1970.
2. MEEKS, M.J., LANDOLT, R.R., KESSLER, W.V., and BORN, G.S., J. Pharm. Sci. 60.482 (1971).