

Mice may become caught in nesting material

To the editor:

The January 2012 issue of *Lab Animal* included an article by Shair and colleagues¹ on one of the essential topics in laboratory animal housing: environmental enrichment with nesting material. It cannot be disputed that the addition of nesting material is an important and effective procedure in environmental enrichment², with a wide range of different nesting materials commercially available. The study showed that the addition of enrichment had no adverse effects on reproduction and offspring survival of C57BL/6 mice, and for the most part, this finding correlates with our own observations on a day-to-day basis.

To optimize the housing conditions for the various mouse strains in the Central Animal Facility of Hannover Medical School (a facility with a holding capacity of approximately 30,000 mice), different nesting materials were tested in a small-scale experiment. The quality of nest building with different material and in different mouse strains was assessed, and a mixture of two commercially available nesting materials (a shredded paper and a short fiber material) was deemed optimal and used as the facility's standard nesting material. However, the large-scale use of nesting material proved to have its pitfalls.

Among a large number of mice exposed to the combined nesting material or to the fiber material alone, we observed 13 cases of mice, both neonates and adults, becoming caught in nesting material. As a result of entanglement, these mice suffered injuries that were severe enough to warrant immediate euthanasia. In 12 cases, we observed that fiber nesting material was wrapped rigidly around the limbs, severing the blood flow and causing mild (Fig. 1) to severe cases of reactive edema and necrosis. In one case, we observed shredded paper material wound tightly around a mouse's abdomen. Although the number of affected animals was small, in modern-day laboratory animal housing it is our responsibility to prevent suffering in all animals as far as possible.

Nesting material has become a vital aspect of animal welfare in rodent housing. Provision of nesting material allows the animals to engage in species-specific behavior and to control their environment and can contribute to their overall well-being.

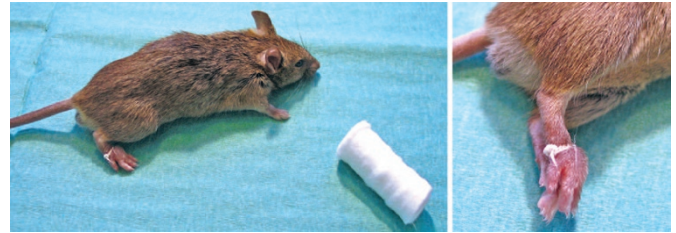


FIGURE 1 | Fiber material wrapped around the limb of a suckling mouse, leading to reactive edema.

Researchers and facility managers must take care in choosing the appropriate material and must keep in mind that addition of nesting materials might result in alterations in animal health, physiology and behavior²⁻⁶. In addition, we note that only when nesting materials were used on a large scale were we able to identify problems with its use.

Emily Northrup, DVM, PhD, Nadine Held, DVM, Hans-Jürgen Hedrich, DVM, DipECLAM, DACLAM (hon) & André Bleich, DVM, PhD, DipECLAM

Institute for Laboratory Animal Science, Hannover Medical School, Hannover, Germany.
email: bleich.andre@mh-hannover.de

1. Shair, H.N., Nunez, Y. & Osman, M.M. Enrichment materials do not negatively affect reproductive success and offspring survival and weight in mice. *Lab Anim. (NY)* **41**, 14–19 (2012).
2. Hedrich, H.J. Housing and maintenance. in *The Laboratory Mouse* (ed. Hedrich, H.J.) (Elsevier Academic, New York, 2012).
3. Pasalic, I. *et al.* Cage enrichment with paper tissue, but not plastic tunnels, increases variability in mouse model of asthma. *Lab. Anim.* **45**, 121–123 (2011).
4. Hutchinson, E.K., Avery, A.C. & Vandewoude, S. Environmental enrichment during rearing alters corticosterone levels, thymocyte numbers, and aggression in female BALB/c mice. *J. Am. Assoc. Lab. Anim. Sci.* **51**, 18–24 (2012).
5. Bazille, P.G., Walden, S.D., Koniar, B.L. & Gunther, R. Commercial cotton nesting material as a predisposing factor for conjunctivitis in athymic nude mice. *Lab Anim. (NY)* **30**, 40–42 (2001).
6. Tsai, P.P., Stelzer, H.D., Hedrich, H.J. & Hackbarth, H. Are the effects of different enrichment designs on the physiology and behaviour of DBA/2 mice consistent? *Lab Anim.* **37**, 314–327 (2003).