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SHEPHERD SHACK AS A FORM OF ENRICHMENT MATERIAL FOR MICE

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Abstract: Enrichment materials are used to enhance the breeding capabilities of laboratory animals. These materials are provided in addition to the bedding material that is provided in the animal cages. Generally, C- fold towels are provided to the caging environment of mice and rats as a form of enrichment material. Our objective is to try out another form of enrichment material in order to further enhance the breeding capabilities of the outbred mouse strain housed in standard barrier rooms. Two groups of breeder cages were set up. Group A had bedding materials and C-fold towels. Group B had bedding materials, C-fold towels and shepherd shacks. All other parameters pertaining to the barrier room were kept constant. There were 72 cages of animals in each group. This study was done over a period of 4 months and data such as total number of litters weaned, litters born and animals weaned out of each group were recorded and tallied monthly.

Objective

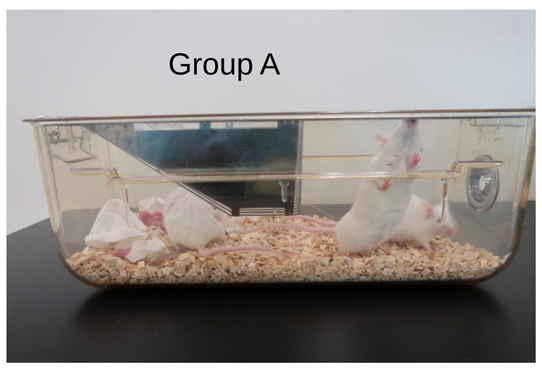
A shepherd shack is a rodent enrichment material that is made from virgin pulp and heat dried in ovens to ensure their quality and minimize contamination by airborne contaminants. The shepherd shack is said to improve the breeding environment of most strains of rodents. The objective of this study is to test the effectiveness of the shepherd shack as an alternative enrichment material that could be used to further enhance the breeding capabilities of the outbred mouse strain (ICR).

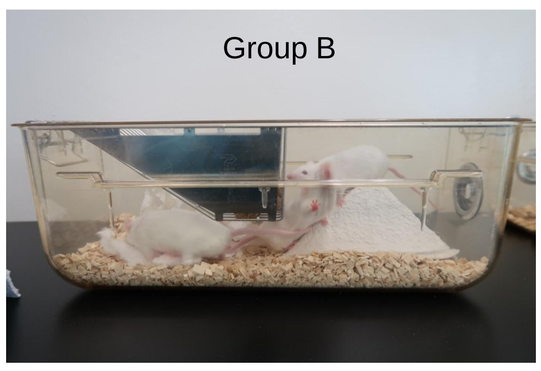
Material

- Cage 1145T (369x156x132 mm, max 5 mice per cage)
- Tapvei aspen bedding chip
- C-fold towels
- Shepherd shacks
- ICR mice

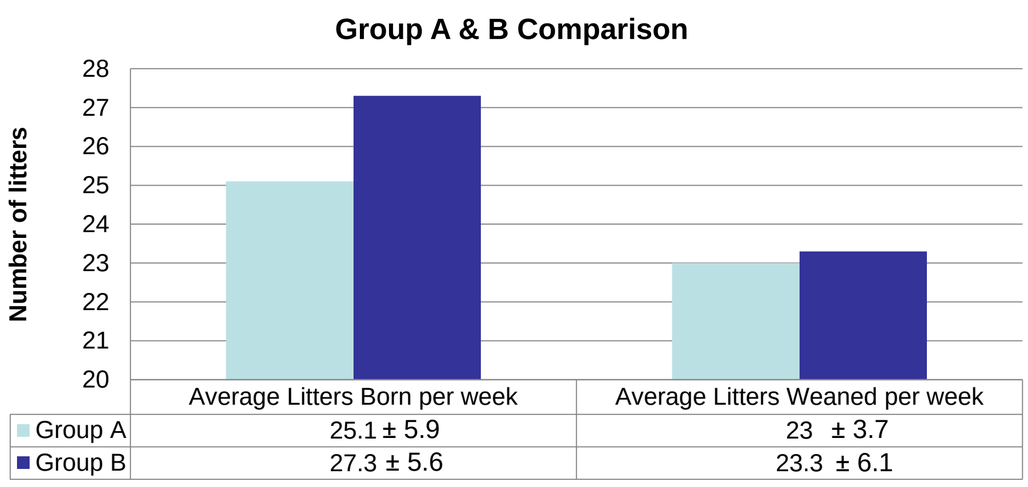
Methodology:

- A total of 144 cages of ICR mice (trio breeding) were divided into 2 groups: A and B. Data such as litters weaned, litters born and number of animals weaned out was collated and segregated according to the groups over 4 months
- Group A consisted of cages with bedding materials and C- fold towels. Group B consisted of cages with bedding materials, C- fold towels and shepherd shacks. All other husbandry parameters were kept constant.

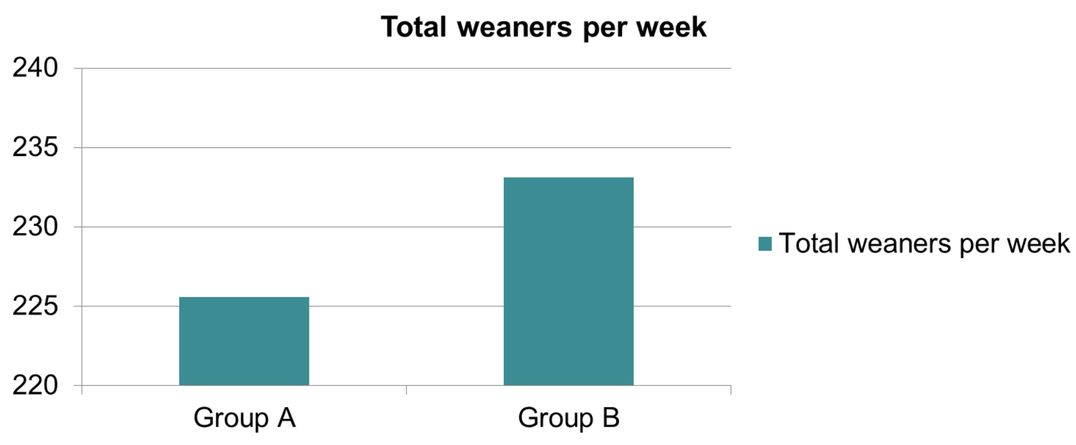




V. Results & Discussion:



	Average Litters Born per week	Average Litters Weaned per week
Group A	25.1 ± 5.9	23 ± 3.7
Group B	27.3 ± 5.6	23.3 ± 6.1



	Total weaners per week
Group A	225.6
Group B	233.1

The average litters born for Group B was higher by at least 2 litters as compared to Group A.

The average litters weaned for both groups were almost the same, with Group B having a higher average by 0.3.

The average number of weaners from Group B was markedly more than the weaner count for Group A.

Based on the results, it can be seen that the breeders in Group B were more productive as compared to the breeders in Group A. More weaners managed to survive in the cage environment of Group B as compared to Group A.

Conclusion:

Overall, the mice breeders in Group B had higher productivity as compared to their counterparts in Group A. This could be partly attributable to the usage of Shepherd Shacks in their caging environment. This is evident in the data collected . It can be said that the Shepherd Shacks is a better enrichment material compared to c-fold by improving the breeding performance. However, more studies using Shepherd Shacks can be conducted to support our findings.

References:

[1] Whitaker, J. W., Moy, S. S., Pritchett-Corning, K. R., Fletcher, C. A., (2016). Effects of Enrichment and Litter Parity on Reproductive Performance and Behavior in BALB/c and 129/Sv Mice. Journal of the American Association for Laboratory Animal Science, 55(4), 387-399(13).

[2] Whitaker, J. W., Moy, S. S., Godfrey, V., Nielsen, J., Bellinger, D., Bradfield, J. (2009). Effects of cage size and enrichment on reproductive performance and behavior in C57BL/6Tac mice. Lab Animal – 38(1). doi:10.1038/laban0109-24.

[3] Shair, H. N., Nunez, Y., Osman, M. M. (2011). Enrichment materials do not negatively affect reproductive success and offspring survival and weight in mice. Lab Animal – 41(1). 10.1038/laban0112-14.