

Multiple Benefits of Nutritional Enrichment

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Abstract

Assessment of post-operative pain and locomotor ability can be a time-consuming and subjective process depending upon the species, study size, and procedure being evaluated. In an effort to address this issue, I began to offer nutritional enrichment to rats involved in an osteoarthritis protocol. The animals would come to the front of the cage to retrieve the treats which allowed observation of their ability to walk and stand erect and permit evaluation of their incision(s) without removing them from their cages. Providing the treats immediately after surgery afforded additional benefits related to decreased pica behavior, distraction away from the incision site, and additional sustenance to combat an initial weight loss often realized post-surgery. Rats were typically interested in the treats, therefore those that did not make their way to the front of the cage to retrieve them were assumed to be experiencing some difficulties, requiring further examination. The technique is simple and quick, providing an easy and efficient method to aid in post-operative assessments making the experience more palatable for both the study animals as well as the personnel involved.

BIO SERV Rodent Enrichment Treats



Fruity Gems™, certified



Bacon Yummies™, certified

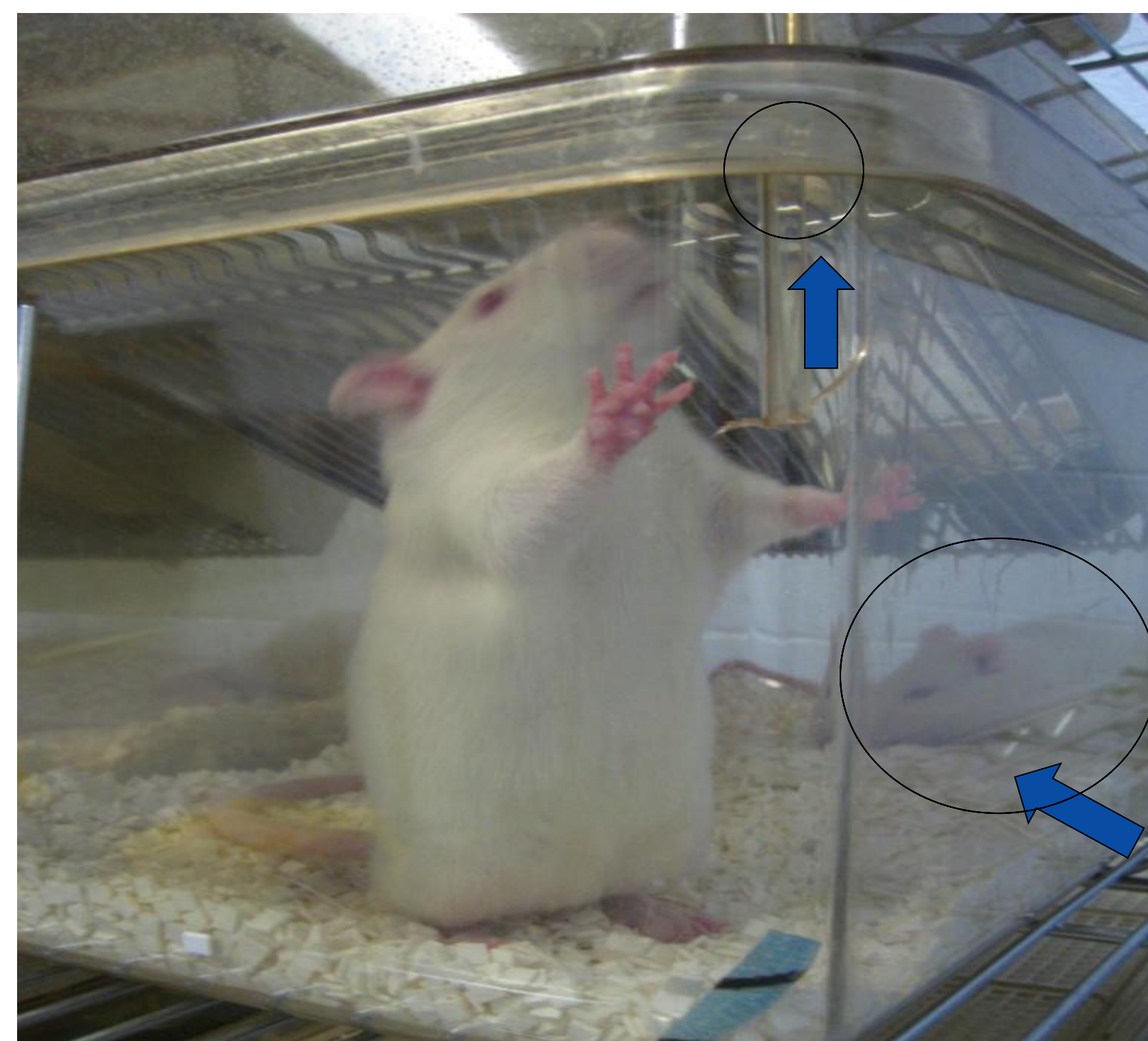
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Introduction

Every now and then you come across a technique that appears so simple that you wonder why no one had thought of it before. This is basically what happened during a recent project I was involved in that required surgery on rats and subsequent postoperative monitoring for pain, stress, and wound healing. This type of assessment can be time consuming for the individual(s) performing it and stressful to the animals as a result of the additional handling involved. I routinely provide nutritional treats to animals post-operatively as a source of enrichment. In this case I began to notice a number of positive occurrences directly associated with this practice which were not initially anticipated.

Materials & Methods

Animals used in this instance were Sprague Dawley rats which underwent knee surgery (meniscal tear) to create an osteoarthritis model. All animals were to be evaluated postoperatively for pain and the ability to ambulate normally as well as healing of the incision sites. Immediately post-operatively, “Fruity Gem” treats were placed in the bottom of the cage with the bedding. Over the course of the study “Bacon Yummies”, BIO-SERV, Frenchtown NJ) were placed on the grated tops at the front of the cages. Animals were assessed daily for wound healing, pain, and ambulatory ability. Those not showing interest in the treats or those with obvious problems identified when they approached the treats were evaluated more closely.



Rat showing interest in treat on cage top while cage mate lies in the back of the cage, not moving, possibly in pain.



Knee incisions available for assessment without removing animal from the cage.

Results

The simple act of providing treats was found to afford multiple benefits:

- 1) Most obviously they fulfilled a requirement for enrichment.**
- 2) They offered something other than bedding on the cage floor for the rats to eat upon recovering from the effects of anesthesia/analgesia.**
- 3) They provided a distraction from the incision site to allow more time for healing to occur.**
- 4) They helped combat the initial drop in weight typically experienced postoperatively.**
- 5) As the animals came to the front of the cage in anticipation of the treats, a quick, hands-off assessment of incision sites and ambulatory ability following surgery was possible.**

Discussion

In addition to the benefits already listed, medications and/or vitamins can also be added to treats to facilitate dosing if desired. As a general note of caution, before providing enrichment snacks to experimental animals, obtain permission from the investigator as some treats may affect experiment results, particularly in the case of metabolic studies or those monitoring food consumption. Treats should be provided sparingly otherwise the animals may become disinterested if there is an unlimited supply or they may stop eating their balanced diet in favor of the treats. Using certified treats from a reputable supplier permits monitoring of extra calories if necessary. Although this presentation was limited to rats with knee surgery, the techniques and benefits described here may be adapted to other species undergoing different procedures.

Conclusion

By applying this simple technique, I achieve multiple positive benefits, including some which I had not initially anticipated. While most people think of treats as simply providing nutritional enrichment, their multiple uses and study value should not be discounted. In this instance they were employed to aid in the evaluation of post surgical rats with regards to mobility and wound healing. The technique is quick and easy to apply and provides a tasty reward to the animal. Simple solutions should not always be regarded as second rate; some are obviously effective!