

# AN ALTERNATIVE ANIMAL MARKING METHOD: USE OF HAIR-DYE

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## ABSTRACT

**Introduction:** While working with a group of animals, it is important to identify each animal. This is of great importance in experiments using many animals. Many marking methods are used for this purpose in experimental studies.

**Materials and Methods:** We used many marking methods in a study that was performed in diabetic rats, but none of them were sufficient. Finally we used hair dye for marking. We dyed one of the four extremities and the back of the animal. The procedure was performed with a tooth brush. We gave a specific number to the every rat according to the dyed portions in prone position. We named them as follows: number 1 undyed rat, number 2 back of the rat, number 3 right upper extremity, number 4 left upper extremity, number 5 right lower extremity, and number 6 left lower extremity.

**Results:** We followed the 72 rats in standard conditions for 11 weeks. There was a minimal paleness at the end of the eleventh week, but all dyed parts were easily distinguishable. We did not need to apply dye again during the experiment.

**Discussion:** The use of hair dye for marking is effective and easy for long duration experiments.

**Key Words:** Animal Marking, Rats, Hair Dye.

## DENEY HAYVANI İŞARETLEMEDE ALTERNATİF BİR METOD: SAÇ BOYASI KULLANIMI

### ÖZ

**Giriş:** Hayvan deneylerinde bir grup hayvanla çalışırken her bir hayvanın birbirinden ayırt edilmesi önemlidir. Deney hayvanlarının birbirinden ayırt edilebilmesi için bir çok yöntem tanımlanmıştır. Biz bu amaçla diabetik sıçanlarla yaptığımız deneylerimizde bir çok yöntemi kullandık; fakat bunların hiç bir bizi tatmin etmedi ve sonuçta saç boyası ile işaretleme yöntemini kullanmaya başladık.

**Yöntem ve denekler:** Yöntemimizde sıçanları 4 ekstremitesinden biri, sırt arka kısmı veya boyasız olmak üzere 6 farklı grubu ayırdık. Her bir bölgeyi diş fırçası ile siyah saç boyası ile boyadık. No 1: Boyasız. No: 2 sırt arka kısmı. No 3: sağ üst ekstremité. No: 4 sol üst ekstremité. No 5: sağ alt ekstremité. No 6: sol alt ekstremité. Toplam 72 sıçanı 11 hafta aynı koşullarda izledik.

**Bulgular:** Deney sonunda minimal solma haricinde tüm boyalı alanlar rahatlıkla seçilebilmekteydi. Deney boyunca boyayı tekrar uygulama gereksinimi olmadı.

**Sonuç:** Uzun süreli deneylerde saç boyası uygulaması kolay, etkili ve ucuz bir yöntem olduğu sonucuna ulaştık.

**Anahtar Sözcükler:** Hayvan İşaretleme, Sıçan, Saç Boyası.

## INTRODUCTION

While working with a group of animals, it is important to identify each animal. This is particularly important in experiments including many animals. To identify each animal, many marking methods are used in experimental studies (1-5). They include the application of a metal ring to the ear of the animal, cutting a piece of the ears of the animals, and marking their tails with some numbers/symbols (6,7).

Most methods have many drawbacks. Cutting of their ears without anesthesia is not ethical and may be harmful to the animals (8). To mark their tails is not easy and you must do it at least 2-3 times per week (even if you use permanent pens). More sophisticated methods such as implantable transponders and biometric systems are also available for animal identification (5). However, these methods require more invasive approaches in addition to increased experimental budget due to the devices that will be needed. Therefore, the electronic identification methods are widely applied for commercial animals such as cattle or pigs (9).

We have tried several marking methods for a study that was performed in diabetic rats, but none of them were effective enough. Markings on their tails were wiped off easily. Cutting the animals' ears caused infection, especially in diabetic animals. In this study, we used hair dye for marking and evaluated its efficacy for identification of animals.

## MATERIALS AND METHODS

We used 72 Wistar rats for this study. We dyed one of the four extremities and the dorsum of each animal. The dyeing procedure was performed with a tooth brush. After application of the dye, excess dye was removed with a piece of cotton. Each animal that had been dyed was kept away from other animals for 15 minutes for drying. At the end of this waiting period we wiped the remaining extra dye again with a piece of moist cotton and then returned that animal to the rest of the subjects.

We gave a specific number to every rat according to the dyed portions in prone position. The dyed anatomical parts of each animal were coded as follows:

- 1: undyed rat,
- 2: dorsum of the rat,
- 3: right upper extremity,
- 4: left upper extremity,
- 5: right lower extremity and
- 6: left lower extremity.

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**Number 1:**  
**Undyed rat****Number 5:**  
**Right Lower Extremity****Number 6:**  
**Left Lower Extremity**

**Figure 1:** We followed the rats for 11 weeks. There was minimal paleness at the end of the eleventh week, but all dyed parts can be distinguished easily in the pictures.

After the identification procedures, we placed six rats in the same cage as a set as described above.

## RESULTS

We followed the 72 rats in standard conditions for 11 weeks. There was a minimal paleness at the end of the eleventh week; but all dyed parts were distinguished easily (Figure 1). None of the subjects required re-dyeing during the 11 weeks. Single dyeing was sufficient for the duration of the experiment.

## CONCLUSIONS

In this study we found that single dyeing with a regular hair dye can be used for identification of animals for at least 11 weeks. This method can be easily performed and adds very little to the budget of the study due to the wide availability of the hair dye and its relatively low cost. Depending on the number of the subjects in the study, some other anatomical areas of the animals can also be dyed other than those mentioned here. This can allow us to use the same identification principle even with significantly larger animal groups. In conclusion, the use of hair dye for marking is effective, easy, and cheap for long experiments.

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## REFERENCES

1. Ohwada K. Permanent marking of colored mice using dry ice. *Jikken Dobutsu*. 1991; 40: 395-399
2. Honma M, Iwaki S, Kast A, Kreuzer H. Experiences with the identification of small rodents. *Jikken Dobutsu*. 1986; 35: 347-352
3. Iwaki S, Matsuo A, Kast A. Identification of newborn rats by tattooing. *Lab. Anim*. 1989; 23:361-364
4. Wang L. A primer on rodent identification methods. *Lab. Anim. (NY)*. 2005; 34:64-67
5. Cameron J, Jacobson C, Nilsson K, Rögnavaldsson T. A biometric approach to laboratory rodent identification. *Lab. Anim. (NY)*. 2007; 36: 36-40
6. Özyazgan İ., Özbetir U., Eskitaşoğlu T. Deneysel hayvanlarının renkli teller kullanılarak işaretlenmesi. *Türk Plastik Rekonstrüktif ve Estetik Cerrahi Dergisi* 2005. 13 (3):
7. Kitagaki M, Shibuya K. Nylon ear tags for individual identification of guinea pigs. *Contemp Top Lab Anim Sci*. 2004; 43: 16-20.
8. Cover CE, Keenan CM, Bettinger GE. Ear tag induced *Staphylococcus* infection in mice. *Lab Anim*. 1989; 23: 229-233.
9. Santamarina C, Hernández-Jover M, Babot D, Caja G. Comparison of visual and electronic identification devices in pigs: slaughterhouse performance. *J Anim Sci*. 2007; 85: 497-502.