

## Assessing The Effects Of Bedding Type And Environmental Enrichment On Commonly Used Behavioural Tests In Rats

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Preclinical behavioural pharmacology plays a pivotal role in our understanding of the mechanism of action of psychotropic drugs. As such, it is important that preclinical behavioural test results are valid and reliable. However, a review of the recent literature suggests that experimental parameters of tests differ markedly between laboratories, possibly contributing to differences in results and hence making comparisons between laboratories unreliable. Two potential sources of variation are the bedding type used, and the inclusion or exclusion of environmental enrichment (EE), a growing requirement in EU legislation. Thus, the aim of this study was to assess the potential effects of these two parameters on a range of commonly used behavioural tests.

Singly housed, male Sprague-Dawley rats were used. Animals were housed in wood shaving or paper bedding, either with or without EE. EE was provided in adulthood (11 weeks old; with two weeks acclimatisation before testing). EE included both physical (plastic tube and nesting material) and nutritional (novel nutritional supplements provided weekly) enrichment. The behaviour of rats was assessed in the elevated plus maze (EPM; %open arm entries (%OAE)), open field (OF; distance moved (DM)), forced swim test (FST; immobility), Morris water maze (MWM; latency to find platform) and the hot plate test (HPT; latency to display pain). Data were analysed using twoway ANOVA.

|                     | <b>EPM</b>  | <b>OF</b>      | <b>FST</b>            | <b>MWM</b>                          | <b>HPT</b>                         |
|---------------------|-------------|----------------|-----------------------|-------------------------------------|------------------------------------|
|                     | <b>%OAE</b> | <b>DM (cm)</b> | <b>Immobility (s)</b> | <b>Latency to find platform (s)</b> | <b>Latency to display pain (s)</b> |
| Wood shavings alone | 25±18       | 2372±542       | 220±39                | 42±13                               | 11±4                               |
| Wood shavings + EE  | 24±15       | 2065±618       | 215±40                | 46±12                               | 10±2                               |
| Paper alone         | 21±18       | 2264±903       | 221±16                | 49±14                               | 15±6                               |

|            |         |        |       |      |
|------------|---------|--------|-------|------|
| Paper + EE | 2453±15 | 227±33 | 44±16 | 13±2 |
|            | 23±11   | 1      |       |      |

Table 1. Effect of bedding type and EE on a range of behaviours. Data expressed as Mean ± SD (n=4-7 per group).

Table 1 demonstrates that there was no effect of bedding type or EE on baseline parameters in the tests used. These results suggest that utilising a paper bedding or providing EE do not affect baseline results compared to wood shaving and non enriched housing, in any of the tests used. Further behavioural testing with pharmacological compounds needs to be carried out to assess the potential effects of bedding type and EE on drug-induced behavioural effects.