

Video Article

Hyponeophagia as a measure of anxiety in the mouse

TODO TODO¹

¹TODO, TODO

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Abstract

Before the present day, when fast-acting and potent rodenticides such as alpha-chloralose were not yet in use, the work of pest controllers was often hampered by a phenomenon known as "bait shyness". Mice and rats cannot vomit, so to overcome the problem of potential food toxicity they have evolved a strategy of first ingesting only very small amounts of novel substances. The amounts ingested then gradually increase until the animal has determined whether the substance is safe and nutritious. So the old rat-catchers would first put a palatable substance such as oatmeal, which was to be the vehicle for the toxin, in the infested area. Only when large amounts were being readily consumed would they then add the poison, in amounts calculated not to affect the taste of the vehicle. The poisoned bait, which the animals were now readily eating in large amounts, would then swiftly perform its function. Bait shyness is now used in the behavioural laboratory as a way of measuring anxiety. A highly palatable but novel substance, such as sweet corn, nuts or sweetened condensed milk, is offered to the mice (or rats) in a novel situation, such as a new cage. The latency to consume a defined amount of the new food is then measured. These latency figures are typically highly variable. We have found that if the animals are removed from the test situation back to the home cage for a brief rest after a set time period, and subsequently retested, and the cycle repeated if necessary until eating finally occurs, this procedure avoids ultra-long latencies and saves the experimenter time. The advantage of hyponeophagia over anxiety tests such as the plus-maze, is that repeated testing can be performed, as the type of anxiety being measured is always the same and not affected by the previously run tests, unlike in the plus-maze¹⁶. It is now known that several different aspects of emotionality are covered by the umbrella term "anxiety"^{11,15,18}. Mice showing changes in hyponeophagia will not necessarily show changes in open field, elevated plus-maze or light-dark box tests. So the brain systems underlying performance on these tests must be at least somewhat different. For example, the hypothalamus and amygdala may well participate in hyponeophagia as they are concerned with (among other things) regulation of food intake.

Disclosures

No conflicts of interest declared.