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Tickling Rats to Screen for Depressive-like Behavior in Preclinical Research

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Introduction: Rats produce high-frequency sounds (USVs) inaudible to the human ear. When rats are tickled their sound production increases - this is said to reflect positive emotions. The Flinders Sensitive Line (FSL) rat is a genetic rodent model of depression; hence, its altered emotional state may result in a distinct USV profile.

Objectives: To investigate whether USV profiles differ between rat strains and whether tickling has an antidepressant effect. To examine the effect of ketamine, a presumed rapid-acting antidepressant, on the USV profile. Lastly, to study tickling's effect on genes involved in feeding-regulation in hypothalamus and stress-sensitive genes in the submandibular glands.

Aims: To explore the utility of USV production during tickling stimulation as a screening method for depressive-like behavior in preclinical research.

Methods: We investigated the FSL rats' USVs during six weeks of tickling. Flinders Resistant Line rats, Sprague Dawley rats and a light-touch group were used as controls. Depressive-like behavior was evaluated with the forced swim test. Ketamine or a vehicle was administered acutely after five weeks of tickling.

Results: Preliminary results show a significant difference between strains in their USV production during tickling. However, data analysis is still in progress and further results will be presented at the congress.

Conclusions: The study will elucidate the differential development of USVs following tickling stimulation in the FSL, FRL and SD rats, and furthermore shed light on the effect of tickling on the behavioral phenotype and gene expression.