**Investigating Latency to Immobility and IL-1 Receptor Blockade in Modulating Antidepressant Response in a Rodent Model of Postpartum Depression**

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**Background:** Postpartum depression (PPD) affects approximately 10–20% of new mothers and is linked to dysregulation of the HPA axis, increased proinflammatory signalling, and reduced neurogenesis in brain regions such as the hippocampus (Bloch et al., 2003; Gobinath et al., 2018). In rodents, chronic postpartum corticosterone (CORT) administration mimics PPD-like phenotypes, including reduced maternal behaviour and increased passive coping in the forced swim test (FST) and reduced neurogenesis (Qiu et al., 2020; Workman et al., 2016; Brummelte & Galea, 2010). Although selective serotonin reuptake inhibitors (SSRIs) like fluoxetine (FLX) remain first-line treatments, they are often ineffective in PPD models (Qiu et al., 2020). High levels of proinflammatory cytokines, such as interleukin-1β reduce antidepressant efficacy (Syed et al., 2018; Qiu et al., 2020). Anakinra (KIN), an interleukin-1 receptor antagonist (Anderson et al.,2013), blocks the actions of IL-1β, thus it may be a viable target to enhance antidepressant efficacy. While traditional FST scoring emphasizes total immobility duration, measuring latency to immobility, or how quickly animals begin passive coping, may provide a more sensitive indicator of treatment efficacy.

**Hypothesis:** We hypothesize that postpartum CORT treatment reduces latency to immobility in the FST. Treatment with FLX and KIN is expected to raise latency.

**Methods:** Adult female rats were assigned to one of six groups combining postpartum injections of CORT or oil vehicle, FLX or dextrose (DXT), and KIN or saline. Injections occurred daily from PD2 to PD23, with KIN administration beginning on PD8. On PD22–23, animals underwent the FST. On PD22, rats completed a 15-minute pretest; on PD23, they completed a 5-minute test. All behaviours were video recorded and scored by blinded observers for swimming, climbing, immobility, and latency to immobility (first ≥1–2s of passive floating).

**Results:** Blinded behavioural scoring is underway; however, based on prior literature and the study design, we anticipate that CORT-treated dams will exhibit reduced latency to immobility, while FLX+KIN treatment may increase latency, reflecting a shift toward active coping. Formal statistical analyses will be conducted once scoring is complete to evaluate group differences.

**Conclusion:** Although complete analyses are pending, this study aims to establish latency to immobility as a sensitive indicator of antidepressant efficacy in postpartum depression models. Given the role of IL-1β in SSRI efficacy, co-treatment with anakinra and fluoxetine may offer a promising strategy to mitigate CORT-induced depressive-like behaviour. These findings may help inform the development of more effective, mechanism-based therapies for postpartum depression.