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Therapeutic potential of *Centella asiatica* in the intergenerational effect of childhood stress on depressive-like behaviors

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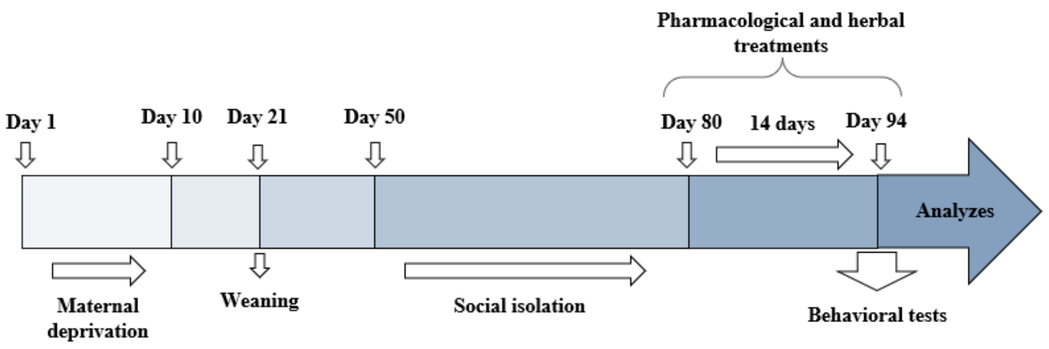
INTRODUCTION & AIM

Relevant factors underlying major depressive disorder (MDD) are childhood stress and a lack of social support, which are mimicked in animal models by maternal deprivation (MD) and social isolation (SI). The objective was to evaluate depressive-like behaviors in rats subjected to MD and SI and in the female offspring, and to assess the treatment with *Centella asiatica* and madecassic acid.

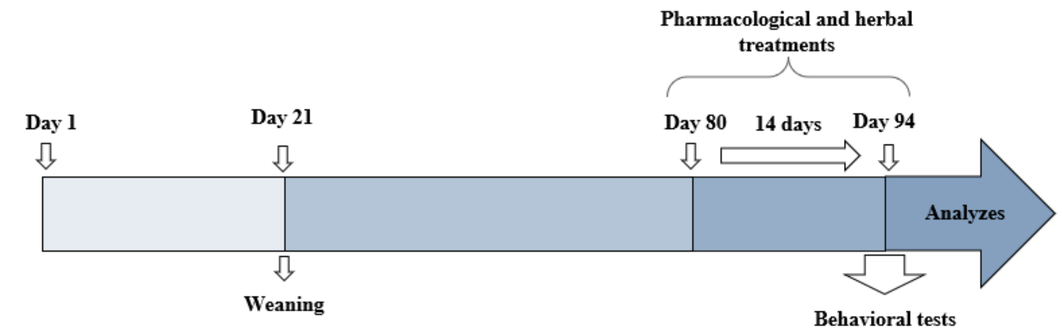
METHOD

Experimental Design - Phase I



Control (no stress) + Saline (n = 20)
MD + SI + Saline (25)
MD+ SI + Escitalopram (10 mg/kg) (n = 20)
MD + SI + *C. asiatica* (30 mg/kg) (n = 20)
MD + SI + Madecassic acid (10 mg/kg) (n = 20)

Experimental Design - Phase II

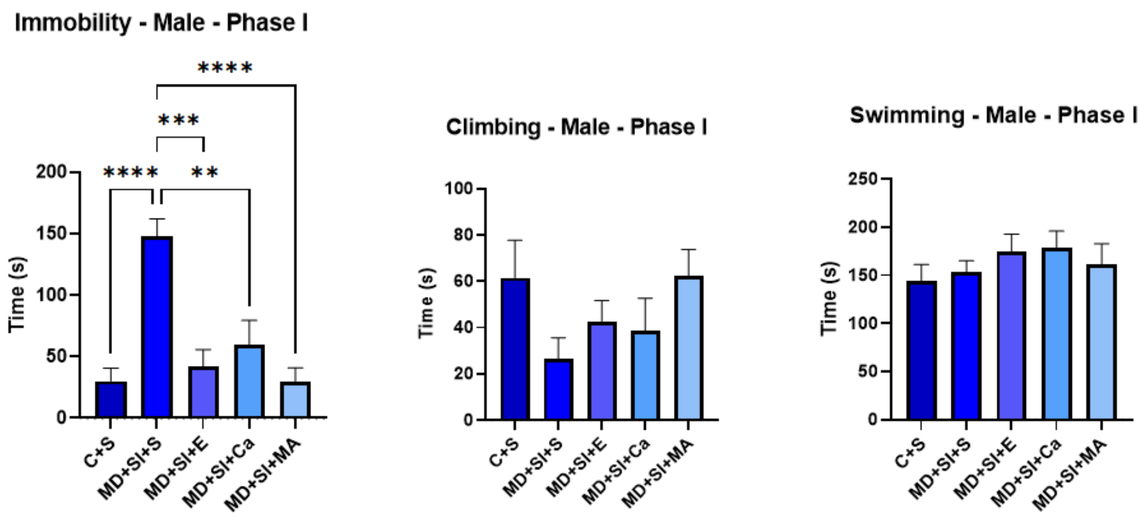


Control (no stress) + Saline (n = 20)
Offspring (mothers MD + SI) + Saline (n = 20)
Offspring (mothers MD + SI) + Escitalopram (10 mg/kg) (n = 20)
Offspring (mothers MD + SI) + *C. asiatica* (30 mg/kg) (n = 20)
Offspring (mothers MD + SI) + Madecassic acid (10 mg/kg) (n = 20)

RESULTS & DISCUSSION

In the forced swimming test, immobility time was higher in the stress + saline group compared to the stress-free control group, and all treatments reversed this depressive-like behavior in the first phase.

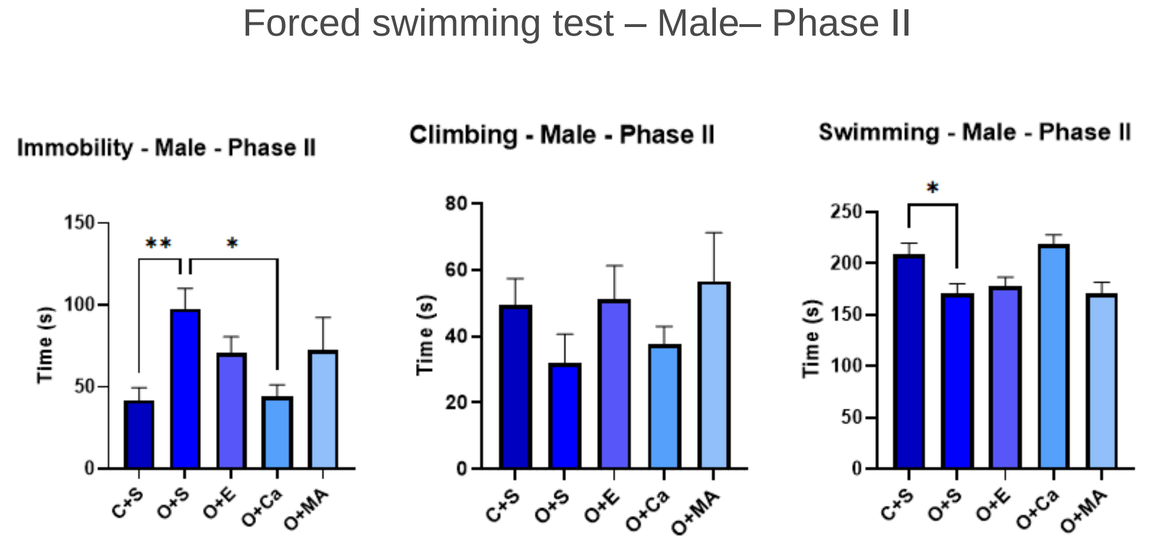
Forced swimming test – Male– Phase I



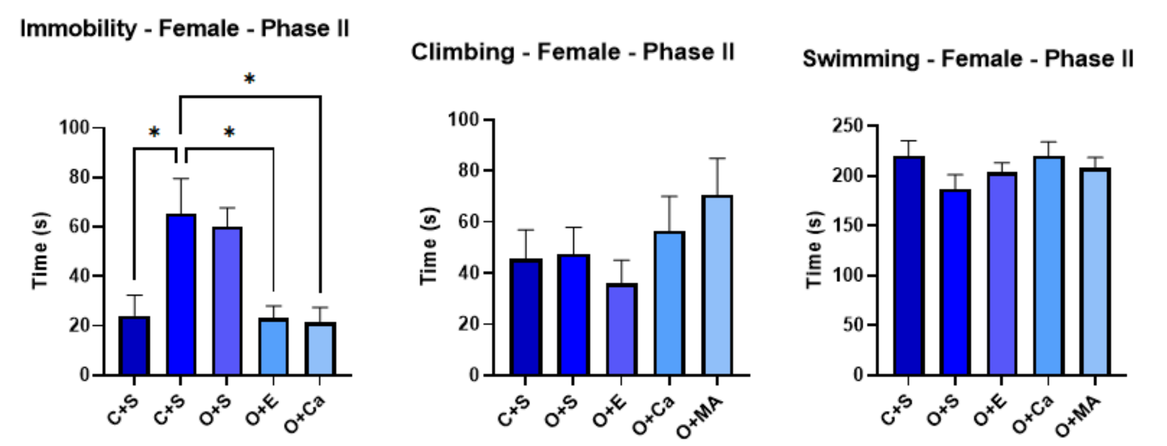
Forced swimming test – Female– Phase I

In the second phase, immobility time was higher in the offspring + saline group compared to the control group, and treatment with *Centella asiatica* in males and *Centella asiatica* and madecassic acid in females reversed this behavior.

Forced swimming test – Male– Phase II



Forced swimming test – Female– Phase II



There was no significant difference between the groups in phase I and II regarding crossings and rearings in the open field test.

CONCLUSION

Stress in the first generation causes depressive-like behavior in rats, which *Centella asiatica* and madecassic acid can counteract. Mothers' childhood stress can have intergenerational effects on their children, and treatments with *Centella asiatica* and madecassic acid reduced depressive-like behaviors in stressed mothers and their offspring.