ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

DIPARTIMENTO
DI FARMACIA
E BIOTECNOLOGIE

AVVISO DI SEMINARIO

Il giorno **25 Settembre 2024**
alle ore **14:00**

Dr. Loredana Maria Losapio

PhD student in Biotechnological, Biocomputational, Pharmaceutical and Pharmacological Science at the University of Bologna

(supervisor: Prof. Patrizia Romualdi)

terrà un seminario in lingua inglese dal titolo:

Impact of Prenatal Cannabis Exposure on Offspring Revealed in Behavioral and Molecular Studies

Area tematica: Neuroscience

in presenza:
Aula 1, via Belmeloro 6, Bologna BO

Colleghi e studenti sono cordialmente invitati

ABSTRACT

Prenatal cannabis exposure (PCE) can adversely affect brain development, potentially leading to neuropsychiatric disorders later in life such as depression, anxiety, and substance use disorders. Δ9-tetrahydrocannabinol (THC) can cross the placental barrier, impacting neurodevelopment with long-lasting consequences. Both THC and cannabidiol (CBD), found in Cannabis sativa L., interact with the endogenous cannabinoid system, crucial for neurodevelopment from embryonic stages to adulthood. This disruption may alter cellular processes and neurocircuitry, influencing behavior later in life. Very limited information, however, exist on potential effects during infancy. This study evaluated behavioral and molecular phenotypes of male and female pups following prenatal cannabinoid exposure to THC and CBD. Pregnant adult female rats underwent vapor exposure to either vehicle or cannabinoids (50 mg/mL THC + 5mg/ml CBD) 30 min/day from gestational day (GD) 5 to GD20. Animals were sacrificed 24hrs after the USV test and plasma and brain retrieved for molecular analyses. Infant isolation-induced Ultrasonic Vocalizations (USVs) at postnatal day 10 were assessed to evaluate the affective state of the pups. THC+CBD-exposed pups showed reduced USV calls but uniquely exhibited calls in the 20 kHz range typically emitted in aversive situations. Deep-learning analysis revealed disrupted communication patterns in THC+CBD-exposed pups. PCE can alter the endocannabinoid system, dysregulation of which may lead to changes in the hypothalamic-pituitary-adrenal (HPA) axis activity and corticosterone stress hormone levels. While corticosterone levels did not differ between groups, their correlation with USV calls was altered in THC+CBD-exposed pups, suggesting modified stress responses. These findings indicate prenatal cannabis exposure may affect social communication and stress response in infancy. Molecular analyses of brain samples are ongoing to further explore these effects.

BIOGRAPHICAL SKETCH

Loredana M. Losapio is a third-year PhD student in Biotechnological, Biocomputational, Pharmaceutical and Pharmacological Science at the University of Bologna. In 2021, she got her master's degree in Chemistry and Pharmaceutical Technology with an experimental thesis in Pharmacotherapy. Afterwards, she spent a 3-month period abroad as an intern at the Universitätsklinikum Hamburg-Eppendorf (UKE) where she had the opportunity to improve her skills in molecular biology. Her research covers different topics such as pain, addiction, and neuroinflammation. In particular, her doctoral project aims to study the endocannabinoid system's role in early-life social experiences and brain reward mechanisms. She is currently working on prenatal cannabis exposure and its neurodevelopmental effects on offspring at the Department of Neuroscience at Icahn School of Medicine at Mount Sinai (NY) as a visiting PhD student under the supervision of Dr. Yasmin Hurd.