THC use during rat pregnancy found to result in harm to brain of male offspring

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A large team of researchers from Italy, Hungary and the U.S. has found that administering THC to pregnant rats resulted in damage to the brains of male offspring. In their paper published in the journal *Nature Neuroscience*, the group describes their experiments with rats and THC

and what they found.

In recent years, marijuana has become more accessible in many parts of the United States—several states have removed legal restrictions for recreational use, with a resulting increase in use. One area of concern is that doctors have reported pregnant women using marijuana to reduce symptoms of morning sickness and anxiety. Prior research has suggested that doing so might be bad for the baby, leading doctors warn against smoking marijuana when pregnant. Now, it appears that marijuana ingestion might be even worse for fetal development than doctors had imagined—the researchers with this new effort report that the use of THC, the active ingredient in marijuana, in pregnant rats harms the brains of their offspring.

To test the possible impact of THC on pregnant rats, the researchers fed multiple test animals doses they believed were equivalent to human consumption during a random pregnancy. They allowed the rats to give birth and then charted the progress of the offspring as they grew into adults.

The researchers report that they found what they describe as an increased susceptibility to THC in male offspring, but not females. They also found higher than normal amounts of dopamine in the brains of the "teen" male offspring—in the ventral tegmental area, which is known to play a role in reward motivation. They also found that the young male offspring were more likely to engage in risky behavior, such as crossing a shaky bridge the researchers built for testing such behavior.

The researchers report that they were able to "cure" the risky behavior in the young male rats by giving them pregnenolone—a drug that has been approved by the FDA for treating mental disorders in humans, including bipolar disorder, schizophrenia and autism.

More information: Roberto Frau et al. Prenatal THC exposure produces a hyperdopaminergic phenotype rescued by pregnenolone, *Nature Neuroscience* (2019). DOI: 10.1038/s41593-019-0512-2