

Expectant mothers can mitigate the impact of marijuana on baby's brain development

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A team of researchers led by members of the University of Colorado School of Medicine at the Anschutz Medical Campus found that choline, an essential micronutrient, can prevent fetal brain developmental

problems that can occur when mothers use marijuana while pregnant.

The findings are critical because [marijuana use](#) can negatively impact [fetal brain](#) development and early childhood behavior, such as increased impulsivity and memory dysfunction.

The study was published today in *Psychological Medicine*.

"In Colorado, it's common for women to use marijuana before they know they're pregnant and some continue to use as a natural remedy for morning sickness, depression and anxiety," said Camille Hoffman, MD, MSCS, associate professor of maternal fetal medicine, University of Colorado School of Medicine. "In this study, we found that maternal marijuana use begins to negatively impact the fetal [brain](#) at an earlier stage in pregnancy than we expected. However, we also found that eating [choline](#)-rich foods or taking choline as a supplement may protect the child from potential harm."

Fifteen percent of 201 mothers in the study used marijuana both before and beyond 10 weeks gestation. Infants of mothers who continued to use marijuana beyond 10 weeks had decreased cerebral nervous system (brain) inhibition at one month of age. Decreased brain inhibition this early in development can relate to problems in attention and social function. Later in life, this can translate into a predisposition to conditions like [substance abuse](#), depression and psychosis.

In addition, infants exposed to prenatal marijuana beyond 10 weeks gestation had lower "regulation" scores at 3 months of age. This can cause decreased reading readiness at age 4, decreased conscientiousness and organization as well as increased distractibility as far out as age 9. These adverse effects in the infant were not seen if women had higher gestational choline in the early second trimester.

Overall, results showed maternal choline levels correlated with the children's improved duration of attention, cuddliness and bonding with parents.

"We already know that prenatal vitamins improve fetal and child development, but currently most prenatal vitamins do not include adequate amounts of the nutrient choline despite the overwhelming evidence of its benefits in protecting a baby's brain health. We hope that this research is a step towards more OB-GYNs, midwives and other prenatal care providers encouraging [pregnant women](#) to include choline in their prenatal supplement regimen," Hoffman adds.

This study is the first to detect central nervous system effects of marijuana in human newborns and it identifies a vulnerable gestational period for the impact of marijuana on fetal brain development that is earlier than anticipated—as early as the end of the first trimester. Usually reporting in studies are retrospective and don't look at the effects of marijuana ingestion at different trimesters.

Marijuana use was assessed during pregnancy from women who later brought their newborns for study. Mothers were informed about choline and other prenatal nutrients and advised to avoid alcohol, tobacco, [marijuana](#) and other drug use. Maternal serum choline was measured at 16 weeks' gestation.

Provided by CU Anschutz Medical Campus

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