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Pregnancy and Pot Don't Mix

Marijuana's active ingredient hampers egg's ability to implant, study suggests

By Kathleen Doheny
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TUESDAY, Aug. 1 (HealthDay News) -- Using marijuana at the time of conception or in early pregnancy can result in pregnancy failure, a new study in mice suggests.

"Marijuana exposure may compromise pregnancy outcome," said Sudhansu Dey, the corresponding author of the study, published in the August issue of the *Journal of Clinical Investigation*. Marijuana's active ingredient, THC, can disrupt the body's finely tuned signaling system and interfere with a fertilized egg's ability to implant in the lining of the uterus, the study found.

Dey, the Dorothy Overall Wells professor of pediatrics, cell and developmental biology and pharmacology at Vanderbilt University Medical Center, and his colleagues conducted their experiments in mice. It's known that marijuana, the most widely used illegal drug among women of childbearing age, binds to two receptors, called cannabinoid receptors 1 and 2 (CB1 and 2). These receptors are found in the brain and also in sperm, eggs and newly formed embryos.

Typically, the two receptors are activated by a signaling molecule called anandamide, which is synthesized by an enzyme known as NAPE-PLD and then is degraded by another enzyme called FAAH. This balance, or "tone," of the anandamide is crucial for the embryo to develop normally.

Dey and his team suppressed FAAH activity in the mice. This increased the level of anandamide, which mimics what happens when a woman smokes marijuana and increases the level of THC, which binds to the same receptor as anandamide. The results showed that when FAAH activity is suppressed in the embryos and oviduct, anandamide levels rise, preventing the embryos from completing their passage to the uterus and compromising the pregnancy.

"This is a major finding," said Dey, "that if you block FAAH and disturb anandamide levels, there is a compromised pregnancy outcome."

"This occurs very early during pregnancy, right from the start of fertilization," he said. "This may explain tubal pregnancies, it may be one cause of retention of embryos in the oviduct." He stressed that the experiment was only in mice.

What wasn't known before, he said, is what happens if you block the FAAH.

Other research, also in animals, has suggested that pregnant women who smoke pot can pass on memory problems to their offspring. And pot use in women during pregnancy has been linked to low birth weight and to symptoms in the baby, such as excessive crying and shaking, according to the March of Dimes.

In an accompanying commentary in the journal, Herbert Schuel, professor emeritus of anatomy and cell biology at the University at Buffalo, State University of New York, said the Dey study findings "show that exogenous THC can swamp endogenous anandamide signaling systems," affecting many processes in the body.

And Schuel offered another warning: Several drugs in development to suppress appetite work by modifying anandamide signaling. Since many women of reproductive age take weight-loss drugs, he suggested that

these drugs must be carefully evaluated to determine the long-term effects on women.

In an interview with *HealthDay*, Schuel said the Dey study "provides insight into normal mechanisms that regulate early development of the embryo and its transport through the oviduct to the uterus," as well as how marijuana affects that process.

Marijuana use, Schuel said, could also increase the risk of ectopic or tubal pregnancies, a serious situation in which the embryo lodges outside the uterus, typically in the fallopian tube.

More information

To learn more about the pregnancy risks posed by marijuana use, visit the **March of Dimes**.

SOURCES: Sudhansu K. Dey, Ph.D., Dorothy Overall Wells professor of pediatrics, cell and developmental biology and pharmacology at Vanderbilt University Medical Center, Nashville, Tenn.; Herbert Schuel, Ph.D., professor emeritus of anatomy and cell biology at the University at Buffalo, State University of New York; August 2006, *Journal of Clinical Investigation*