

# Likely drug interactions in placenta could harm fetus

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To date, studies in pregnant women examining transport of drugs across the placenta are rare and inadequate, said Tomo Nabekura, PhD. Such knowledge could be vital to preserving fetal health. In a new laboratory study, Nabekura and colleagues have illuminated a piece of this puzzle, and the results hint that mothers taking new anti-hepatitis C and/or anti-HIV drugs along with anti-hypertensives or non-steroidal anti-inflammatories (NSAIDs) could be raising the risk of birth defects or stunting fetal growth, respectively. The research was published ahead of print in *Antimicrobial Agents and Chemotherapy*, a journal of the American Society for Microbiology.

In earlier animal studies, various investigators had shown that NSAIDs can cause [birth defects](#), and that anti-hypertensives retard [fetal growth](#), said Nabekura, who is Professor, School of Pharmacy, Aichi Gakuin University, Nagoya, Japan.

In this new study, Nabekura et al. showed that the new antiviral drugs inhibited transport of two "surrogate" drugs across those cells. The surrogate drugs are compounds that interact with the trans-placental [transporter proteins](#) in the same manner as the drugs of interest, but which are not used as drugs. That "competitive inhibition" arises from the fact that the surrogate drugs and the antiviral drugs have the same mechanism for adhering to the transporter proteins. The functional amino acids in the transporter are positively charged, and the antivirals (as well as the NSAIDs and anti-hypertensives) are negatively charged.

In [pregnant women](#) taking both antivirals and NSAIDs and/or anti-hypertensives, the research raises the possibility that latter drugs could accumulate in the fetal circulation, and damage the fetus. The antivirals have not been shown to harm a fetus.

"The new research shows that more detailed knowledge of placental [drug](#) transport is badly needed," said Nabekura. "Investigators need to conduct in vivo pharmacokinetic studies of drug transfer in the developing placenta, and pharmacokinetics and pharmacodynamics in the fetuses."

**More information:** Tomohiro Nabekura et al. "Effects of antiviral drugs on organic anion transport in human placental BeWo cells," *Antimicrobial Agents and Chemotherapy* (2015). [DOI: 10.1128/AAC.01634-15](#)

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