

New study indicates that metformin has the potential to prevent and treat preeclampsia

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An article published today in the *American Journal of Obstetrics and Gynecology* reports that a commonly-used drug for the treatment of diabetes, metformin, may have the potential to prevent and treat preeclampsia. Metformin has long been used to treat diabetes in both non-pregnant and pregnant patients, and is considered safe during pregnancy.

Preeclampsia affects 5-8% of all pregnant women and is diagnosed by the new onset of high blood pressure and the presence of protein in the urine after 20 weeks of gestation. This condition is a leading cause of maternal death; approximately 100 maternal deaths and 400 perinatal deaths worldwide occur per day. Thus far, the only [treatment](#) for [preeclampsia](#) is delivery.

Preeclampsia is a disorder unique to pregnancy and is related to problems with the placenta. Inadequate blood supply to the placenta causes damage to this organ, which leads to the release of toxins into the maternal blood, causing high blood pressure and possible damage to multiple organs, such as the liver, brain, and kidneys.

Over the last decades, scientists have identified that preeclampsia is an endothelial cell disorder (endothelial cells are the inner coat of all [blood vessels](#) in the body). At least two toxins produced by the placenta (soluble vascular endothelial growth factor receptor 1 and soluble endoglin) are elevated in preeclampsia, and they can damage endothelial cells, causing the dysfunction responsible for the disease. However,

agents or drugs to decrease the production of these toxins are not currently available for clinical use in pregnancy.

A group of physician-scientists from Melbourne, Australia (Mercy Hospital for Women and the University of Melbourne) report that the drug metformin decreases the production of the two toxins elevated in preeclampsia and also helps heal injured blood vessels. The lead author of the study, Dr. Fiona Brownfoot, believes that in light of the laboratory findings, [clinical trials](#) should now be conducted to see whether metformin could be used to treat women with preeclampsia. Professor Stephen Tong, senior author and head of the Translational Obstetrics Group at Mercy Hospital for Women, emphasized that metformin is safe during pregnancy.

The Editor-in-Chief for Obstetrics of the *American Journal of Obstetrics and Gynecology*, Roberto Romero, MD, DMedSci., characterized the in vitro findings as exciting and promising. Dr. Romero indicated that an anti-angiogenic state (a condition that does not favor the formation of blood vessels) is present not only in preeclampsia, but also in other pregnancy complications such as fetal death, fetal growth restriction, and premature labor. "Metformin appears to be the aspirin of the 21st century, because the drug has been discovered to have unexpected health benefits not only in [diabetes](#), but also in polycystic ovarian disease and recent work has highlighted its anti-cancer properties," Dr. Romero said. He believes that systematic reviews of previous randomized clinical trials in which pregnant women had been given [metformin](#), as well as new randomized clinical trials, are urgently needed to determine if this simple intervention can be effective in preventing preeclampsia and other pregnancy complications.

More information: "Metformin: a potential agent for the prevention and treatment of preeclampsia based on its effects on anti-angiogenic factor secretion and endothelial dysfunction," by Fiona C. Brownfoot,

Roxanne Hastie, Natalie J. Hannan, Ping Cannon, Laura Tuohey, Laura J. Parry, Sevvandi Senadheera, Sebastian E. Illanes, Tu'uhevaha J. Kaitu'u-Lino, and Stephen Tong, [DOI: 10.1016/j.ajog.2015.12.019](https://doi.org/10.1016/j.ajog.2015.12.019) , published online in advance of its issue of the *American Journal of Obstetrics and Gynecology*.

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