Propylactic effect of genistein - an alternative to estrogen during preeclampsia

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ABSTRACT

Estrogen is the chief hormone that increases during pregnancy and enables the uterus and placenta to improve vascularization, transfer nutrients, and support the developing foetus during pregnancy. The isoflavone genistein (4', 5, 7-trihydroxyisoflavone) is one of the most abundant polyphenolic compounds naturally present in legumes such as soybeans, soy product and cereals. It possesses antioxidant defense, antihypertensive and antiapoptotic properties which protects the cell from free radical induced oxidative stress (FRIOS) caused by the low level of estrogen. However the effect of genistein on placental cells is seldom explored. The placenta is a major organ, in which trophoblast plays a crucial role during pregnancy. Incomplete trophoblast invasion may lead to pregnancy related disorder like preeclampsia. Since preeclampsia is a hypertensive disorder, administration of synthetic drugs is known to cause deleterious effects to both mother and fetus during pregnancy. Hence phytochemical therapy is recommended. Thus the present study was aimed to evaluate the effect of genistein supplementation on the oxidative stress and antioxidant capacity on trophoblast from normotensive and preeclamptic placenta. A significant increase in stress along with decrease in antioxidant status was observed in preeclamptic placental trophoblast whereas genistein incubation significantly decreased the level of LPO and PC with simultaneous increase in the level of GRR and TAC. Thus the study revealed that genistein may play a significant role in controlling oxidative stress during preeclampsia. Hence, genistein can be used as an effective dietary supplement for the treatment and management of preeclampsia.