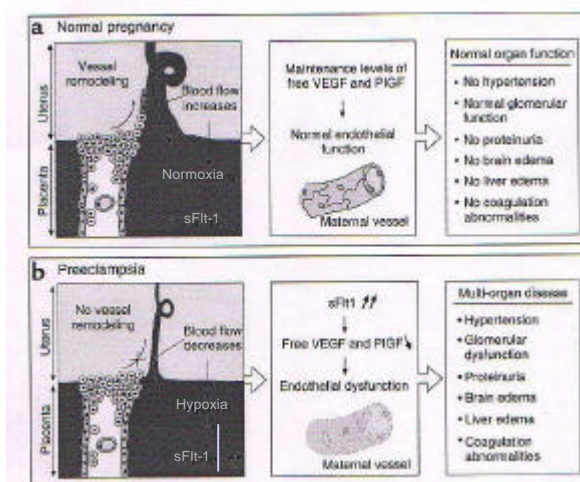




Scientific Information!

Risk from Placenta: the Exclusive Factor for Preeclampsia Discovered?

Preeclampsia is still a very severe disease during pregnancy. High blood pressure, massive edema in the legs and loss of proteins via the kidneys are the main characteristics of this disease. If the disease progresses to eclampsia, the lives of both the mother and child are threatened mainly by sudden seizures. The disease affects about 5% of pregnant women and about 15% of all maternal deaths are related to this disease. To date, there is no causative treatment, the only option being to abort pregnancy. For many years it has been speculated that factors released from the placenta may play an important role during the onset of this disease. Scientists from the Beth Israel Hospital in Boston have now identified the putative factor responsible for the disease. As recently published in the *Journal of Clinical Investigations* (Vol. 111, p. 649) it is attributed to the soluble receptor protein sFlt1 (sVEGFR-1). It is the soluble part of a transmembrane receptor involved in blood vessel formation. The protein is produced in placenta during pregnancy and is highly overexpressed and released into the circulation in patients with preeclampsia. Within 48 hours after birth the level is normalized. If the protein is used to treat experimental animals such as rats, a syndrome similar to preeclampsia is observed. However, it is not clear what the physiological function of sFlt-1 may be. On the other hand, it is known that the soluble receptor blocks two important growth factors, which are involved in the increasing development of the maternal blood vessels during pregnancy. One is vascular endothelial growth factor (VEGF or VEGF-A) and the other is placental growth factor (PlGF). In a related publication in the same issue (page 707) it was demonstrated in a mouse model that a reduction of the VEGF level in blood led to morphological changes in the kidney very similar to those observed in patients with preeclampsia. It is speculated that a certain amount of VEGF may be necessary to protect the kidneys. This discovery may lead to the development of new drugs stabilising the VEGF concentration in maternal blood or reducing the level of circulating sFlt1. Furthermore this finding may be very important for diagnostic procedures to identify patients with higher risks to develop preeclampsia.



Products from Reliatech related to preeclampsia/sFlt-1 research:

- sFlt1/sVEGFR-1 ELISA
- VEGF-A RELIDA
- sFlt1 and sKDR
- rh VEGF121 and rh VEGF165
- rh PlGF-1 and rh PlGF-2
- rm VEGF164
- anti-Flt1 antibodies
- anti-VEGF antibodies
- anti-PlGF antibodies

Hypothesis and the role of sFlt1/sVEGFR1 in preeclampsia. **a)** During normal pregnancy, the uterine arteries are infiltrated and remodeled by trophoblasts to meet the oxygen demands. **b)** In the placenta of preeclamptic women, trophoblast invasion is not sufficient resulting in lower blood flow and hypoxia. Increasing amounts of sFlt1 are released from the placenta and scavenge free VEGF and PlGF, thereby lowering the level of both growth factors. This altered, lower level of growth factors causes endothelial dysfunction and results in multi-organ disease.