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Title: Magnesium Sulphate Treatment During Hypertensive Pregnancy Improves Maternal but not Fetal Outcomes in Rats

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Magnesium sulphate ($MgSO_4$) is known to induce a vasodilatory effect via increased NO production and improved endothelial function. We hypothesised that $MgSO_4$ may be used as a preventative therapeutic during hypertensive pregnancies.

Spontaneously hypertensive stroke-prone female rats were time mated. On gestational day (GD) 10.5 0.9% saline (SHAM, n=11) or 750ng/kg/min of ANGII (n=17) were administered via mini pump. A subset of ANGII animals received daily 1% w/v $MgSO_4$ drinking water from GD0.5 (n=4). Blood pressure, cardiac function and uteroplacental blood flow were measured by tail cuff plethysmography and ultrasound throughout pregnancy. Fetal measurements were collected at sacrifice.

ANGII shows features consistent with SPE in humans via decreased CO & SV and elevated BP and decreased fetal and placental weights vs SHAM (****p<0.0001, **p<0.01, *p<0.05). ANGII+$MgSO_4$ showed a decrease in BP vs ANGII (**p< 0.01). Treatment with $MgSO_4$ had no significant effect on cardiac function. $MgSO_4$ did not improve indices of uteroplacental flow vs ANGII or SHAM. Both fetal and placental weights were significantly reduced in ANGII+$MgSO_4$ vs SHAM (**p<0.001).

These results suggest 1% w/v $MgSO_4$ may be beneficial as a preventative therapeutic in pregnancies affected by super-imposed pre-eclampsia for maternal but not fetal outcomes.