**Abstract Title:**

MINERALS IN THE URINE OF WOMEN WITH OR WITHOUT PRE-ECLAMPSIA

**Objectives:** We have previously reported that renal excretion of some trace elements can biomark acute kidney injury (AKI). Pre-eclampsia (PE) and gestational hypertension are known to impact kidney function of pregnant women. One proposed mechanism for development of PE is reduced kidney anti-oxidant status. Certain minerals have anti-oxidant properties such as selenium and zinc and reduced bioavailability in plasma has been associated with PE. In this study, we investigated the mineral composition of urine from normotensive, healthily pregnant women versus women whom developed gestational hypertension or PE. We sought to determine if urinary minerals may indicate those women at risk for later development of pre-eclampsia. Additional patients with pre-existing chronic hypertension (CHT) or CKD, but not PE, were also considered. Two independent cohorts of women from the UK and Sweden were available for analysis.

**Methods:** Women with, or without, high blood pressure during pregnancy and proteinuria (PE) or high blood pressure without proteinuria (GH) or normotensive controls (NC) were recruited from two obstetric centres in London, UK and Lund, Sweden. Spot-samples of urine were collected from 10 to 40 weeks gestation and were analysed for 32 elements (all µg/L) by inductively-coupled plasma mass spectrometry (ICP-MS). Urinary copper is presented after correction for urinary creatinine (i.e. µg mmol).

**Results:** Urine sampling was conducted, on average, at an earlier time-point for normotensive controls vs. PE (170 ± 59 vs. 219 ± 40 dGA) in the London clinic. In urine of PE, relative to NC, corrected zinc and copper concentration were significantly elevated (e.g. Zinc: 40.2 [34.8,64.7] vs. 17.3 [10.6,26.8] µg mmol-1, median [IGR]). Urine copper is presented in **Fig 1a**. In contrast, corrected urine calcium was significantly lower (0.82 [0.37,4.18] vs. 10.04 [5.0,17.5] µg mmol-1). Spot-samples of urine from patients in Sweden were similar (e.g. Zinc, 71.6 [62.5,107.4] vs. 7.32 [5.21,23.9] µg mmol-1), for Copper see **Fig 1b**. Increments in urinary zinc and copper in women with PE, appeared only during late gestation (Copper, see **Fig 1b**).

**Conclusion:** For women with established preeclampsia, the pattern of minerals in urine is significantly different to healthily pregnant, normotensive controls. The data suggest PE has significant effects on renal handling of minerals. The extent to which the pattern reflects poorer functioning kidneys or limited anti-oxidant status remains to be determined.

