Objectives: To analyse the effect of zinc supplementation in growth and nutritional status of a homogeneous group of newborns with intra uterine growth retardation and asymmetric growth. The effect of changes of zinc status on growth and leptin serum concentrations was also analysed. Population and methods: A double blind, randomised clinical trial was designed in order to detect differences in growth between zinc and placebo groups during the first 6 months of life. 31 infants were included either to the zinc group (n = 14) (38.8 ± 1.4 weeks GA, 2,171 ± 253 g body weight) or the placebo group (n = 17) (38.9 ± 1.1 weeks GA, 2,249 ± 220 g body weight). The zinc group received a supplement of 3 mg elemental zinc per day (as zinc sulphate). Results: There were not significant differences between groups for anthropometric measurements through the study period. We found a significant effect of the study group, in hair zinc concentrations, but not in serum zinc concentrations; post-hoc comparisons for hair zinc revealed that there were significant differences between groups at 1, 2, and 6 months of age. Changes in serum and hair zinc concentrations from baseline to 6 months, showed significant correlations with changes in weight/age and length/age z-scores, in the supplement group. Changes in leptin serum concentrations during follow-up, showed significant correlations with changes in sum of 4 skinfolds and weight/age z-score, in the placebo group. Changes in hair zinc concentration through the study period showed significant correlations with changes in leptin serum concentrations from baseline to 6 months of follow-up. Conclusions: In a homogeneous group of intra uterine growth retardation infants with asymmetric growth, 3 mg/day zinc supplementation do not show significant improvements in weight and length growth. Changes in zinc status were related with changes in weight and length during the first 6 months of life. Changes in leptin serum concentrations were related with changes in the anthropometric indices of body fat accretion.

Keywords
Zinc, Intrauterine growth retardation, Growth, Nutritional status, Leptin, Randomised trial.