Background and aims Type 1 diabetes (T1D) is an autoimmune disease that results from the progressive and selective destruction of pancreatic beta cells. Trace elements have a key role as well as in adaptive immunity in inflammatory processes. The aim of this study was to measure circulating levels of Zinc (Zn), Copper (Cu), and protein fractions in patients with T1D.

Methods Sixty (60) subjects aged less than 15 years, divided into two similar groups (30 with recently type 1 diabetes and 30 controls) were recruited in the Department of Paediatrics of Tlemcen University Hospital, Zinc and copper were measured by polarimetry. The protein fractions were measured by zone electrophoresis on cellulose acetate (PFHC, serum protein electrophoresis) (HELENA, USA).

Results Serum Zn and Cu levels were significantly elevated in type 1 diabetes compared with controls (respectively, p = 0.01, p = 0.002, 0.05). Conversely, the percentage of alpha-1, alpha-2, beta and gamma globulins, and the total rate of serum globulins were identical in the two groups (p > 0.05). This was also the same for the pre-beta and beta lipoproteins which were significantly increased in patients compared with controls (p < 0.01 and p < 0.05, respectively).

Conclusion Disorders Zn and Cu could be significant immunological abnormalities and inflammatory signs at the beginning of the installation of T1D.