

## **PIXE analysis of trace elements in the skin of hemodialysis patients with and without uremic pruritus**

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### **Abstract**

The aim of this study was determined the relationship between the uremic pruritus and the trace elements in the skin. The study included 45 chronic kidney disease (CKD) patients of stage4 or 5 within three months after the induction of hemodialysis. Patients with concomitant psoriasis or atopic dermatitis were excluded. Subjects were divided into two groups based on grading of pruritus. The pruritus group consisted of patients with moderate or severe pruritus and the non-pruritus group consisted of patients with mild or no pruritus. The study was approved by the ethics committee of Odate municipal Hospital and each patients gave informed consent by writing. The skin samples were taken at the forearm or elbow when vascular access operation. The skin biopsies were immediately quench-frozen and cut 20  $\mu$ m thickness horizontal to the skin surface, and seven sheets of cryosection samples were sectioned. The elements were measured by the method of particle induced X-ray emission (PIXE). The concentration of total calcium in the deeper spinous layer (i.e., 80 $\mu$ m) of CKD patients with uremic pruritus was lower than those of CKD patients without pruritus.