

# **SERUM AND URINE FLUORIDE IN A POPULATION WITH CHRONIC KIDNEY DISEASE OF UNCERTAIN ETIOLOGY (CKDU) IN DRY ZONE OF SRILANKA**

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## **Background**

Chronic Kidney Disease of uncertain aetiology (CKDu) is endemic among farming communities in the dry zone of Sri Lanka where ground water fluoride is known to be higher than recommended levels.

## **Objectives**

To compare the serum and urine fluoride levels in CKDu patients with healthy controls

## **Methods**

All biopsy proven CKDu patients (n=116) at renal clinic (from 2015 to 2017) and healthy controls (n=77) from Girandurukotte and Wilgamuwa were recruited. Serum and urine fluoride levels were determined using ion selective electrode method.

## **Results**

The serum fluoride concentration ranged between 0.47 and 9.58 mg/L while urine fluoride varied between 0.45 and 6.92 mg/L in CKDu patients. Among patients, urine fluoride levels showed a significant difference with the CKDu stage while no difference was observed between males and females and defined age groups (> 40 years and < 40 years). In endemic controls, serum fluoride concentration ranged between 0.51 and 1.92 mg/L while urine fluoride varied between 0.36 and 3.80 mg/L. Fluoride in serum and urine was significantly higher in CKDu patients ( $p < 0.05$  and  $p < 0.05$ , respectively) than in endemic control group. In receiver operating characteristics (ROC) plots of fluoride in serum and urine, areas under the curves (AUC) were 0.682 and 0.628, respectively when analyzed CKDu patients against endemic controls.

## **Conclusion**

Fluoride in serum in CKDu cases might be due to exposure to high fluoride levels, possibly through drinking water while higher urinary fluoride excretion would be due to kidney failure, suggesting the possible nephrotoxic role of high fluoride exposure.

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