

# URINARY FLUORIDE LEVELS IN STUDENTS IN THE OM KOI DISTRICT, CHIANG MAI PROVINCE, THAILAND

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**SUMMARY:** Urine is the body fluid most commonly used for biological screening and, as the major route for fluoride (F) excretion is via the kidney, human exposure to F is best measured with the urinary F level. The objectives of the present study were to measure the pH and the levels of albumin, F, and creatinine in spot urine samples from 265 healthy Thai students in the low-F Om Koi district, Chiang Mai province. A histogram of urinary F concentrations was made and the results analysed by the Pearson correlation and a multiple linear regression model. The histogram of the urinary F concentrations was highly skewed toward low values with a mean and standard deviation of  $0.8 \pm 0.5$  mg F/L, a median of 0.7 mg F/L, and an interval or range of 0.2–3.5 mg F/L. A moderately strong correlation was present between urinary F excretion and the urinary F/creatinine ratio ( $r=0.507$ ,  $p<0.001$ ). The age, weight, height, body mass index, urinary albumin/creatinine ratio, and urinary F/creatinine ratio were significantly related to the urinary F with a low coefficient of determination ( $r^2=0.324$ ,  $p<0.001$ ). The results show the urine F level and the urinary F/creatinine ratio for normal Thai students in a low-F area and the values found will be useful as guidelines for assessing individuals at risk for excessive occupational or environmental exposure to F.

Keywords: Fluoride/creatinine ratio; Omkoi district, Chiang Mai province, Thailand; Spot urine examination; Urinary fluoride.

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