CADMIUM: HEALTH PROBLEM IN NON-OCCUPATIONAL EXPOSURE POPULATION IN MAE-SOT, TAK PROVINCE

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CADMIUM: HEALTH PROBLEM IN NON-OCCUPATIONAL EXPOSURE POPULATION IN MAE-SOT, TAK PROVINCE

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This thesis entitled "Cadmium: health problem in non-occupational exposure population in Mae-sot, Tak province" submitted by Sukumarn Niyomtham in partial fulfillment of the requirements for the Master of Science Degree in Biomedical Science is hereby approved.

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ABSTRACT

Cadmium is a toxic transitional metal that causing damage to who exposure to this metal. Cadmium accumulation is causing damage organs in the body, especially kidneys and bones. A 248 population from Mae-Gu and Mae-Taw sub-district, Mae-sot district, Tak province, the area has has been reported cadmium contamination. The participants were both men and women with mean age of 49.72 years (±. 8.65 years). Blood and urine samples were collected after fasting for 8-12 hours for biochemical determination, including fasting glucose, blood urea nitrogen, creatinine, uric acid, aspartate aminotransferase, alanine aminotransferase, alkaline phosphatase, total cholesterol, triglyceride, HDL-C, lipid hydroperoxide, malondialdehyde, total antioxidant levels. Urinary cadmium, creatinine and N-acetyl-β-D-glucosaminidase levels were also determined in the morning void-urine. Aim of this study was to assessment prevalence of cadmium exposure and assessment of health status, especially in liver and renal function of the population in these areas. Results: found that 184 cases (74.19%) had urine cadmium (U-Cd)> 5 μg/gm creatinine and also found that age, NAG and ALP increased (p - value <0.001, p - value <0.001 and p - value = 0.002) and eCrCl levels decreased (p - value <0.001) from the comparison of those population between high with low cadmium accumulation. From the results reveal that high cadmium-exposure can damage renal, by causing renal dysfunction indicate by increasing in NAG activity and decreasing in eCrCl. In summary, this study showed that those areas still emerge in high levels of cadmium, NAG and eCrCl determination can use as the early markers for renal function in these population before they cause the chronic kidney disease.

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ABBREVIATIONS

ALP	=	Alkaline phosphatase
ALT	=	Alanine aminotransferase
AST	=	Aspartate aminotransferase
Cd	=	Cadmium
eCrCl	=	Estrimate creatinine clearance
HDL-C	=	High densiy lipoprotein cholesterol
KDOQI	=	Kidney disease outcome quality initiative
LDL-C	=	Low-density lipoprotein cholesterol
LOOH	=	Lipid hydroperoxide
MDA	=	Malondialdehyde, LOOH
NAG	=	N-acetyl-β-D-glucosaminidase
U-Cd	=	Urine cadmium
WC	=	Waist circumstance
WHO	=	World health organization