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Occupational and dietary exposures of humans to cyanide poisoning from large-scale cassava processing and ingestion of cassava foods.

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Abstract

The biochemical and toxicological effects of occupational and dietary exposure of humans to cyanide poisoning from large-scale cassava processing and ingestion of cassava foods were investigated using spectrophotometric and enzymatic methods. Analysis of urinary and serum thiocyanate (cyanide metabolite) from workers in cassava processing industries, who were 'frequent' [those who eat cassava food(s) at least once a day] and 'infrequent' [those who eat cassava food(s) only occasionally] consumers of cassava-based diets, was carried out with the aid of questionnaires. The mean urinary thiocyanate level of the cassava processors (mean \pm -S.D.; 153.50 \pm -25.21 micromol/l) was 2.2 and 2.6 times higher than that of frequent (70.1 \pm -21.8 micromol/l) and infrequent (mean \pm -S.D.; 59.30 \pm -17.0 micromol/l) cassava consumers, respectively. The mean serum thiocyanate levels rose to 126.73 \pm -12.4 micromol/l for the former and 68.4 \pm -18.3 and 54.7 \pm -13.2 micromol/l, respectively, for the latter. An increase in plasma activity by 10% above normal of aspartate aminotransferase (AST) was observed in 40% of the cassava processors, whereas it was within normal range in all consumers. The activities of alanine aminotransferase (ALT) and alkaline phosphatase (ALK.PHOS) were within the normal value in all cases studied. The blood glucose level of 50% of the cassava processors was 100 mg/ml or above while that of the consumers was in the range of 68-85 mg/100 ml. The total protein, serum albumin and creatinine levels were in the range for normal values for the processors and consumers. The health implications of these findings are discussed.

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