

FLUORIDE ABSORPTION BY RICE FROM COOKING WATER

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SUMMARY: The villagers in Lamphun, Thailand, drink bottled water that is free of fluoride (F). However, because their piped water supply is taken from groundwater laden with F, dental and skeletal fluorosis are still rampant. To identify the major source of F intake, various foodstuffs, including meat, vegetables, and rice, were collected from local markets and households and analysed for their F contents. The rice, prepared with cooking water from the piped water supply by washing several times and being soaked overnight before being steamed, contained the highest amount of F. Experiments were carried out, by soaking sticky rice in water containing 0–15 mg/L of F for 24 hr and a strong correlation was found between the F level in the soaking water and the F in the rice, with a maximum F content of 10 mg/kg of rice (wet weight). However, the F content in the rice cooked in households was slightly less than the rice samples used in the soaking experiments, and the correlation, between the F in the cooking water and the F in the cooked rice, was not as strong. These results indicate that the F content of cooked rice is affected by not only the F concentration in soaking water, but also by the cooking methods and the soaking time. Based on the results of this study, it is recommended not to use F-containing groundwater for cooking, and, at least, to use other waters such as bottled water for rice soaking. Shortening the rice soaking time can also lower the F absorption by rice.

Key words: Cooking water; Drinking water; Groundwater; Rice; Thailand; Village waterworks.

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