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A RAPID METHOD FOR THE DEFLUORIDATION OF FLUORIDE-RICH DRINKING WATERS AT VILLAGE LEVEL

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Many water supply schemes, particularly in developing countries where dug wells form the major water source, contain excess fluorides normally detrimental to dental health. A simple and inexpensive method of defluoridating these fluoride-rich waters was required and it was found that kaolinitic clay forms a suitable raw material in the defluoridation process. Fluoride adsorption and desorption reactions in clay were investigated. At equal concentrations of total fluoride in solution, fluoride retention was greatest at pH = 5.6 and decreased both at low and high pH. Fluoride sorption conformed to both Langmuir and Freundlich isotherms over the entire range of fluoride concentrations (5-25 ppm). However, fluoride desorption conformed only to the Freundlich isotherm. These properties make it possible for the use of kaolinitic clay as defluoridating material to be used in potable water supplies at village levels.

KEY WORDS: Drinking water, fluoride, village, fluorosis.

INTRODUCTION