

Endemic Fluorosis and High-F clay

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Fluorosis caused by indoor coal-combustion type is one of the few endemic diseases that still lack effective methods of prevention and control. By the end of 2000, there have been about 34 million people living in areas where indoor coal-combustion fluorosis occurs. There were almost 18 million patients with dental fluorosis, and nearly 1.5 million patients with skeletal fluorosis. People in Guizhou Province suffer the most from indoor coal-combustion type fluorosis. About 28% of the population of Guizhou Province (almost 15 million people) suffers from fluorosis, including nearly 10 million dental fluorosis patients (NSB, 2000).

During the period of 1980~1984 the following results were obtained:

1. There is no positive relationship between fluorine concentration in foodstuff and fluorine in soils and rocks.
2. Crops dried indoors over coal fires absorbed high levels of fluorine. Fluorine emitted from coal combustion was acid-soluble fluorine.
3. Of the two factors that induced fluorosis, the method used to dry and store crops was more important than the concentration of fluorine in coal. If there was indoor coal combustion without any protection, and if the main crops of the local people was corn, and if the fluorine concentration of coal was only a few dozens mg/kg, fluorosis would occur.

In a new study, the investigation of endemic fluorosis, as well as the determination of fluorine concentration in environmental samples was conducted. In the area where indoor coal-combustion type fluorosis occurs, local fluorine-rich clay was used to mix with coal to form briquettes. The new study concluded that:

There are two key steps in the procedure of indoor transmission of fluorine:

1. Indoor wet corn and vegetables strongly absorbed fluorine from indoor air;
2. Fluorine strongly accumulated in clay, which was mixed with coal powder to form briquettes for combustion. Therefore, increased percentage of fluorine-rich clay in the briquettes resulted in higher fluorine contents in the corn and other vegetable.

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