New method of cyanide removal to help millions

February 7 2007

A simple process pioneered by an ANU plant chemist could help to remove harmful levels of cyanide from the diets of millions of people in the developing world.

Dr Howard Bradbury from the School of Botany and Zoology in the ANU College of Science has developed a way to remove the poison from cassava flour. The cassava plant (tapioca), is the staple food of nearly 1000 million people in Africa, South America, Asia and the Pacific.

“Cyanide is a toxic poison,” Dr Bradbury said. “If a human ingests five grams of potassium cyanide, they would be dead in a few minutes. In smaller doses, it causes headaches, nausea and dizziness and taken over a period in cassava causes irreversible paralysis of the legs in Africa, a condition known as konzo.

“But cyanide compounds are also produced by many plants as a defence mechanism. Cassava makes the poison to deter predators, and it produces even more when it is stressed, such as in time of drought. But, given its hardiness, the plant’s roots and leaves are valued as sources of food. When the roots are processed into flour and other foods, they can still contain harmful levels of cyanide.”

Dr Bradbury said it’s estimated that over one hundred thousand people – mainly children – in Eastern and Central Africa are now permanently crippled by konzo. In response to this enormous figure, Dr Bradbury

developed a basic kit in the 1990s that measures the amount of cyanide in food.

Building on that success, Dr Bradbury has now developed a simple method that will allow people to remove most of the cyanide in cassava flour.

“By mixing the flour with water into a thick paste and then letting it stand in the shade for five hours in a thin layer spread over a basket, the swollen flour allows an enzyme in the flour to break down the cyanide compound,” Dr Bradbury said. “The cyanide compound produces hydrogen cyanide gas, which escapes into the atmosphere, reducing the amount of poison by up to five-sixths and making the flour safe for consumption the same evening. It’s all so simple that it seems like a gift from God.”

The method has been successfully tested in Mozambique by Dr Bradbury and his colleagues, including Dr Dulce Nhassico and Dr Julie Cliff at Eduardo Mondlane University, who want to initiate a wide-scale grassroots education campaign.

“It’s important that we get people out into the villages to explain the method to rural women, because konzo is a problem that afflicts the poorest of the poor. Some people say, ‘Why do they eat this awful stuff? We’d never eat something like that in Australia’. But the people there have no alternative, they either eat it or starve. This simple process will make cassava flour much safer, and potentially improve the lives of millions.”

Source: Australian National University