Japanese style of soy sauce to the American population might be proof that a traditional fermented flavor in one area can also be accepted by most of the people in another area. It might be presumed that most of the traditional protein foods could be accepted by most of the people in the world, to the extent that the qualities are superior. When we consider the development and popularization of vegetable protein foods, it might be of great importance that we have a further look at the traditional protein foods from this point of view, examine them in detail by modern scientific methods, and develop some new food technology based on these traditional products.

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Fermented Foods of Southeast Asia

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Toxin produced by *Pseudomonas cocovenenans* are bongkrek acid, which is colorless, and toxoflavin, which has a yellow color. Bongkrek acid is responsible for deadly food poisoning which, until recently, claimed victims in Indonesia.

A lethal dose of bongkrek acid is 2 mg/100 g body weight. This dose will kill mice within 2-5 hr, if injected intraperitoneally. Doses of 1 mg/100 g body weight will not kill mice unless the doses are repeated within 40 hr. This is an indication that the BA has cumulative action. Eating bongkrek in small amounts is also still very dangerous for human beings.

Berends et al. have succeded in showing that bongkrek acid acts as an inhibitor to oxidative phosphorylation in mitochondria. In consequence, the ATP production in mitochondria will be disturbed. If it attacks heart muscle cells, the heart will stop due to lack of ATP.

Symptoms of bongkrek poisoning in mice are the same as in human beings. In the very beginning, people suffer from hyperglycemia. Later step-by-step this changes into hypoglycemia and the victim dies due to hypoglycemia. The patient will also suffer acidosis due to rapid lactic acid production in the blood.

Toxoflavin is also dangerous. According to the literature, toxoflavin functions as an electron transport carrier, which bypasses the cytochrome system. The end product of this process is production of hydrogen peroxide which, in fact, is very toxic to the cell. However, cells having abundance of catalase apparently will survive.

Coconut presscake inoculated with *Ps cocovenenans* and incubated at room temperature for five days will become a yellow-brownish color. This was dried and extracted using petroleum ether as solvent and shaken with 2% bicarbonate. A sample kept in 2% Na bicarbonate can last a few months if refrigerated.

Some of the local governments in Central Java have banned the making and selling of tempeh bongkrek. However, since many people are so attached to this particular fermented food, and making tempeh bongkrek is the only source of their income, this particular regulation creates problems. The tempeh bongkrek-making continues underground or illegally.

Using calingcing leaves (*Oxalis sepium*) during the making of bongkrek may help in reducing toxic poisoning. Local people still have not accepted this due to the flavor produced. The future use of NaCl for inhibiting *Ps cocovenenans* has very good prospects since NaCl will certainly be part of the food in the end.

Other Fermented Foods

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In my plenary paper, I did not have time to complete all I wanted to say about the Kaffir beer fermentation. It is also called Bantu beer, and there are some other names. One of the things that I think interesting is that the average cost per pack of Kaffir beer in wax-lined cardboard packages was 15 cents per liter, and for bulk beer it is 10 cents per liter. There are ca. 900 million liters of Bantu beer produced per year, and that bulk beer is declining in volume while the packaged beer that is in the cardboard packages is increasing. The price of the beer is only about half the price of milk or Coca Cola.

I should tell you about the actual production of beer in South Africa. Some plants have a capacity of 4.5 million gallons per month production. As a matter of fact, if you look at the number of breweries in South Africa, there are three large breweries with an annual production of at least 17 million imperial gallons each. There are also 16 breweries with an annual capacity of 1 to 7 million imperial gallons, and there are 50 minor producers who annually produce less than 1 million imperial gallons. Industrialization of the fermentation has only recently happened. The original work that was done in South Africa began in 1954, and in that short period of time the production has gone up tremendously as the figures would indicate.

The Bantu industry, of course, is unique in several aspects. It is a large, modern, industrial fermentation founded on tribal art. The industry also is in the hands of the local authorities and not private industry. Another interesting thing is the profits are controlled by the government, and the greatest amount of profit goes for Bantu development projects. And also it is partly privately financed in that the sorghum malt and the yeast inoculum are made by private industry and sold to the municipal breweries. In 1966, the municipal breweries bought about a quarter of a million pounds of dried yeast for pitching, that is, for inoculation. This is all private industrial work. Also, it is unique in that the government takes out of each gallon of sales 3/4 of a cent which goes back into financing research on the production of Bantu beer.

Now the question comes up of how many companies or