

## MEETING REPORT

**FOOD IS JUST FOOD EXCEPT WHEN IT'S MBP**

WATERLOO—The least difficult obstacles facing biotechnology may be the biological and technological ones. That message emerged at a three day Symposium on Microbial Biomass Proteins held here June 18-20. The conference's emphasis on the safety, economic, and nutritional aspects of microbial biomass protein (MBP) indicates that scientists are now *least* concerned about biotechnical hitches.

There is already some commercial use of microbial biomass protein. American livestock feed suppliers add MBP to their commercial feed mixes. And in Britain, people have been gobbling up MBP faster than New Era Foods can make it. New Era Foods, the joint company formed by Ranks Hovis McDougall (RHM) and Imperial Chemical Industries (ICI) to research and develop MBP, is still only producing about 100 metric tonnes per year in a pilot plant. The MBP in this case is myco-protein, the result of growing the fungus *Fusarium graminearum* on hydrolyzed corn starch. This MBP can be constituted to resemble beef, chicken, or ham. The Sainsbury's Savoury Pie, which has been available in the frozen food section of the giant British food chain since the beginning of 1985, looks and tastes like good, old-fashioned beef pie. Gerald Solomons (RHM Research Centre) said that the consumer response has been "fantastic." "They're usually sold out by Wednesday," he said.

Solomons said that the response of the British regulatory agencies has been less fantastic than that of the average Briton. RHM spent 21 years developing and testing the MBP, mostly to satisfy what Solomons called "unrealistic" regulatory standards. Humans don't eat the way rats do in feeding trials. And of the approximately 4,500 human subjects who did participate in feeding trials, only one had a bad reaction to the product. "A large ethical food company is not in the business of harming its customers," Solomons said.

Some of the Third World participants at the conference said their governments see biotechnology as one of the few viable options left for feeding exploding populations. Virtually all arable land in these countries is now being cultivated; farming that land more intensively would be expensive. Appropriate biotechnology could provide a cheap, locally-controlled alternative. For example, two Mexican delegates reported that

MBP produced from surplus molasses stocks in that country could reduce Mexico's dependence on foreign feed suppliers.

The technology being developed in industrialized countries, however, is intended for large-scale processing of industrial waste streams and not the small-scale, rural agricultural waste processing that interests many developing countries. The five-person Cuban delegation at the conference was not the only group that did not find technology appropriate to their needs. "We have come to the conclusion that nothing is there," said Leonel Gonzalez. "It's a question of time because you don't need it," he told the American, Canadian, and European participants. "We're the ones who need it."

---

*Sainsbury's  
Savoury Pie  
looks and tastes like  
good, old-fashioned  
beef pie.*

---

Ron Cape (Cetus, Emeryville, CA) suggested that the way to satisfy that need was to allow giant American biotechnology concerns freer access to markets in Third World countries. Cape criticized as "insane" the U.S. food and drug anti-dumping laws: he claimed that these laws delayed access to nutritious products by as much as ten years. Most of the Third World delegates rejected this suggestion, and claimed that this analysis was simplistic at best and a double standard at worst.

Many conference participants felt that biotechnology companies are not motivated by an altruistic desire to feed the starving millions. "The main objective is to export it to your country and make a profit," said Alfred Donawa (University of the West Indies, Trinidad). G. Sawar (Bureau of Nutritional Science, Ottawa) said that the safety considerations for introducing an MBP product are the same for developing and developed countries. He said there was a certain cultural arrogance reflected in the belief that, "once they're starving, it's good enough for them."

Biotechnology may be of no more

than academic interest in Canada, at least for the immediate future. Scientists at the Université Laval (Quebec) used a pilot plant to grow algal biomass protein in an urban wastewater growth medium. The only energy required was solar. The researchers harvested the tiny algae by stocking the tanks with slightly larger daphnia—water fleas—which eat the algae. The resulting by-products were the daphnid biomass and chitin, a component of the daphnid cuticle. The biomass, which contained 50-56 percent protein, was used as fish feed; the chitin, which sells for about \$200 (Canadian) per kilogram, is used in food processing and film manufacturing.

Whether MBP has a promising future may depend to a large extent on the social implications of getting protein from waste sources such as livestock manure and urban sewage. Joël de la Noüe (Université Laval) said that the cheapness of current urban waste processing technology and of traditional fish feed sources means processing MBP from sewage and other forms of biological waste may only become attractive when people attach a higher economic value to a clean environment. "We must first be willing to pay something to get a clean environment," he said.

Peter Bell (University of Western Ontario, London), the lone economist at the conference, supported this conclusion. Bell, who admitted that he didn't understand most biotechnology jargon, said that "I do understand words like profit and loss." Bell studied the economics of a paper mill waste processing plant for MBP production; he concluded that "Canada is probably not well-placed internationally" to build such plants without subsidization. In Czechoslovakia, the government financed the development of the paper mill effluent process; Canadian agriculture is efficient enough that such exotic protein production won't generate backing. "Food is just food," Bell said.

Food may just be food, but it is at least technically possible to get that food from some pretty distasteful sources. Public sensitivity about these sources is the main obstacle to public acceptance. As one participant put it, food made from garbage has been around ever since the ancient Chinese installed toilets over their fish ponds and farmers everywhere spread manure on their fields.

—from Mark Timm