Summary of Discussions on Session K

Advances in New Vegetable Proteins

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Five papers were presented in this session and all printed in the section following this report. Most questions addressed to the speakers or other specialists attending this session centered on when and how commercialization of the various proteins could be achieved.

Commercialization of rapeseed protein is expected to follow the general market pattern for other vegetable protein products, with the earliest date mentioned being the mid-1980s. Production of rapeseed is expected to increase in coming years. In Europe, where rapeseed is grown as a winter crop, it must compete economically with wheat, which now produces double the yield of rapeseed. The winter varieties of rapeseed grown in Europe produce a higher yield than the summer varieties grown in Canada. Canadian production, covering 6.75 million acres in 1978, is expected to double by 1990 as crop varieties and production practices are improved. Canada's 1978 rapeseed harvest is an estimated 3.6 million tons; in 1979 acreage is expected to increase to eight million acres.

One question on cottonseed protein was whether gossypol-free concentrates and isolates could be produced from regular cottonseed since glandless variety cottonseed is not available in large quantity. Suitable concentrates and isolates have been produced using freeze drying on a lab-scale basis, but stepping up to larger volumes through use of a spray dryer yielded a product that was darker in color than desired. This problem is still being investigated. Another participant asked whether stable peanut milk products have been produced. They have, with a stability of up to seven days in a refrigerator, roughly similar to cow's milk.

Commercial use of sunflower protein requires removal of chlorogenic acid, either by developing new varieties or through processing. Complete dehulling of sunflower is required to remove undesirable dark color pigments. Two low-fat sunflower protein pilot plants are being run in France, but no commercialization had been undertaken at the time of the conference. In Yugoslavia research work on concentrate and isolate sunflower protein has developed an alkali pneumatic separation process producing 48 to 50% protein materials. The process must be made more economical if it is to become commercially viable.

With regard to peanut protein, the only question raised was how to detoxify aflatoxin-contaminated products. In the United States, aqueous processing, employing sodium hypochlorite as the material of choice, has been used successfully on a pilot plant scale. One participant said researchers in Mysore, India, have used alkali treatment to reduce aflatoxin contamination in peanut food products.

One participant asked how long it takes various forms of wheat gluten to rehydrate, the use of differing rates having been mentioned in a paper. Regular gluten will reconstitute in 20 seconds, while fast dissolving gluten will reconstitute in 10 seconds. Slow gluten can take up to 2 ½ minutes or longer to reconstitute. The choice of variety depends on the needs of the processing system that will use the gluten.