rather remote. Some of the classical symptoms of a food sensitivity are headache, dizziness, abdominal pain, loose stools, irritability, rhinitis, and otitis media.

(2) Etiology of sensitivity. Heiner (5) suggested that age, infection, emotional stress, and ontogeny seem to play a role in the apparent sensitivity to ingested proteins. Further, he showed—as well as did Lippard et al. (7)—that immunologically intact food proteins can be absorbed in apparently healthy infants.

Gruskay and Cooke (3) demonstrated that proteins were absorbed during gastrointestinal infections in infants.

Heiner (4) suspected genetics as playing a role in allergy to cows’ milk.

Heiner et al. (6) showed that cows’ milk contained at least 20 different antigens capable of eliciting precipitins in some humans who regularly ingested milk. They further suggested that the active antigens are heat-labile. They based this on an experiment in which immunodiffusion was employed to measure the presence of antibodies in the blood sera of patients. As a source of antigen they used pasteurized and boiled whole milk. They found many precipitin bands using pasteurized milk, and no precipitin bands using boiled milk.

(3) Rapidity in appearance of sensitivity and some newly recognized symptoms. Vendel (9) showed that anaphylaxis occurred within 10 min following ingestion of milk by infants.

Heiner (6) suspected milk as the offending allergen in idiopathic pulmonary hemosiderosis, since the patient improved dramatically on a milk-free diet. Wilson et al. (10) showed infant sensitivity to cows’ milk to be the cause of gastrointestinal blood loss which resulted in hypochromic microcytic anemia. Using radioactive-labeled erythrocytes, they showed that blood loss diminished or ceased within one or two days after milk withdrawal. Blood loss began after reintroduction of milk into the diet. Further, they stated that the anemia, which was an allergic reaction, was evident only after weeks or months on milk.

(4) Solution of the sensitivity problem. The most expedient and surest solution is to remove the offending allergen from the diet of the individual. Alternately, substitutes for cows’ milk can be employed. The substitutes employed are primarily plant sources and goats’ milk. Of interest are the results of Heiner et al. (6), who showed that there are some antigenic similarities between cows’ and goats’ milk. Equally as interesting, but of no apparent relevance, are their findings that the milk bovine γ, globulins cross-react with similar proteins from human serum.

References


Viruses and Mycotoxins in Milk—Potential Public Health Problems?

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Virus-like particles in cows’ milk. Four investigators have independently reported the presence of virus-like particles in the cytoplasm and at the cell membrane of lymph-node cells from cattle with lymphosarcoma. It has also been shown that lymph-node tissue culture from newborn calves in lymphosarcoma-free herds developed resistance to the virus of vesicular stomatitis when the calves were foster-nursed on cows with lymphosarcoma (6). Transmission of mouse leukemia to infant mice by mother’s milk also has been demonstrated (8). These facts prompted two groups of investigators to examine cows’ milk for particles resembling viruses. One group (7) reported finding five general types of particles by electron microscopy of cows’ milk and listed evidence both for and against interpreting these
particles as being viral. In the second investigation two types of particles were found, of which one resembled murine leukemia virus (4). The data are based solely on results of electron microscope studies, and no conclusions should be attempted on the public health significance of these data at this time. The potential impact of this research when completed, however, makes it seem advisable that the American Dairy Science Association be knowledgeable of the data as they are available.

Mycotoxins in milk. Concurrent outbreaks of diseases in fish and poultry in 1960 have focused attention on the significance of animal feed and human food contamination with mycotoxins in the induction of cancer. Of the mycotoxins, aflatoxin from Aspergillus flavus has been the most thoroughly researched; however, it is but one of a series of fungal contaminants that may occur in cereal products or other foods. Allcroft and Carnaghan (1) fed aflatoxin containing ground-nut meal to crows and found that the milk of these cows contained a substance that induced lesions in the liver of ducklings identical to that of aflatoxin. Thin-layer chromatography (3) has shown that the toxin in cows’ milk is structurally different from aflatoxin; however, the toxicity appears unaltered. Pasteurization or drying of milk did not reduce the toxicity when it was assayed in ducklings. Rennet precipitation of milk has shown that aflatoxin is associated with the cheese or paracaseinate fraction rather than whey. In 1963, studies on market milk showed no samples that contained enough aflatoxin to give a positive test when assayed in ducklings (2). More work should be done to determine the actual levels of mycotoxin in milk, using concentration procedures to make the test more sensitive.

It is difficult to evaluate the public health significance of mycotoxins in milk at this time. Many data indicate that even very small quantities of these toxins are carcinogenic; however, to date no data clearly show that significant levels of mycotoxins are reaching the consuming public through milk.

References

Pesticides in Milk and Milk Products—Public Health Implications

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Reports from the Technical Advisory Committee for the Dairy Industry on pesticides, working under the aegis of the Dairy Industry Committee, indicate that progress is being made on the reduction of levels (not incidence) of contamination of milk and milk products during the past several years. This has been brought about through active educational and enforcement programs by federal and state regulatory agencies, together with educational efforts directed to dairymen and processors by the industry itself. Analytical data representing large geographical coverage of the United States show that over the past 5 yr average levels of the ubiquitous DDT and analogues have been reduced from 1.5 ppm to currently about 0.5 ppm, fat basis. There is evidence of continuing contamination at lower levels of Methoxychlor or Lindane or both—these two compounds being not readily distinguishable by paper chromatography.

Newer methodology, such as gas chromatography with electron capture, which apparently is becoming the method of choice is, however, revealing heretofore unknown incidence of Dieldrin and Heptachlor in milk and milk prod-