

# Soy Protein in School Feeding Programs

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## ABSTRACT

Textured vegetable protein has been a tremendous asset to the Memphis school feeding program. There are several reasons for this: (A.) it is a dry product, easy to handle and store; (B.) shelf life is long enough to permit quantity purchasing and warehousing; (C.) dry storage of textured vegetable protein is much cheaper than refrigerated storage of meats; (D.) our students have not objected to its use; (E.) the absorption qualities of the textured vegetable protein allowed us to purchase ground beef with a 30% fat content, rather than a 22% fat content; (F.) it allows a more innovative approach to school food services; and (G.) it saves money. The introduction of textured vegetable protein into our operations has saved the U.S. school lunch program millions of dollars.

## INTRODUCTION

The points I will make are practical and sincere; and, hopefully, I also will express the views of my fellow major city school food service directors. Perhaps you food scientists and technicians eventually will have the answer to the massive riddle of how to continue food service in public education in large U.S. cities.

As a representative of Memphis city schools, I am proud to represent a school system which has a cafeteria in every school which serves hot food daily to all students who wish to participate.

## NATIONAL SCHOOL LUNCH PROGRAM

When the U.S. Congress passed the National School Lunch Act in 1946, its declared objective was "to safeguard the health and well-being of the nation's children and to encourage the domestic consumption of nutritious agricultural commodities and other food." Since this Act's passage, school lunches have become a basic part of the nutritional and educational programs of the nation, have been an important segment of the food industry, and have expanded the nation's market for food. The program also contributes to a better understanding of good nutrition and improved food habits.

The National School Lunch Program has grown to include cash assistance for lunch and breakfast and has provided extra milk for children in participating schools. There is an additional subsidy for lunch, breakfast, and purchase of equipment for economically needy children. The law also provides funds to the U.S. Department of Agriculture (USDA) for the purchase of surplus agriculture products to be allocated to schools which participate in the National School Lunch Program. The National School

Lunch Program is regulated through the Food and Nutrition Service of the USDA.

The Type A plate lunch, prepared for more than 30 million students daily, is designed to meet at least one-third of the daily dietary allowance recommended for 10-12 year old boys and girls. The Type A pattern includes as a minimum: one-half pint of milk, two ounces of edible protein food, three-fourths cup serving of two or more vegetables or fruits, one slice of enriched bread, and one teaspoon of butter or fortified margarine.

## MEMPHIS CITY SCHOOLS

The Memphis City School System is going through trying times. During the last two years, we have lost more than 35,000 students, mostly to private schools. Most of the parents are not trying to escape from integration, but they do not want their child removed from the neighborhood school. The loss of these children has created an increase in the cost of producing a meal. As of September, we had a total enrollment of 118,000 students.

The Division of School Food Services operates 147 self-contained cafeterias, one central production kitchen, and 13 satellite food service facilities. All schools participate in the National School Lunch Program and receive federal reimbursement and USDA donated commodities. In addition to the National School Lunch Program, most of our secondary schools, grades 7-12, offer a la carte service to their students.

We no longer operate just a school lunch program in Memphis. Breakfast, milk breaks, lunch snacks, summer recreation lunches, and possibly in the future a program for feeding the elderly offer our food services staff daily challenges. Our responsibilities and capabilities are being expanded in our school system to include such pilot programs as Computer Assisted Menu Planning (CAMP), nutrition education, special diets for unwed pregnant students, and schools where all students receive a free breakfast and lunch, regardless of the income of their families.

To offer food service to our 118,000 students in 166 schools, we employ over 1355 food service workers, exclusive of supportive personnel, such as accountants, buyers, computer programmers and operators, and warehouse personnel. Last year it cost \$11,500,000 to operate our program. This may not seem a large amount to you, but you must consider that we collect most of this money in nickels and dimes.

Last year we served over 13,200,000 Type A lunches with an additional \$4,000,000 in a la carte sales, or an additional 7,300,000 meals, for a total of 20,500,000 lunches.

Participation in the federal program runs about 60% in predominantly white schools and 90% in predominantly

TABLE I

Textured Vegetable Protein Used in Entrees

Food	Cost/lb	Annual quantity in lb	Percent soy protein
Burrito	\$.399	250,000	15.0
Charbroiled beef pattie	.815	300,000	21.0
Chicken fried steak	.723	100,000	6.8
Fish cake	.670	100,000	3.0
Corn dog	.810	150,000	3.0

TABLE II

Prices of Ground Beef

Date	Price/lb	Percent fat content
September 1969	\$0.56	22
September 1970	0.59	22
September 1972	0.69	22
September 1973	1.15	39

black schools. Of the Type A meals served, 80% are to students eligible for free meals. Over 9,500,000 lunches were served free last year.

We offered a breakfast program in 46 low income elementary schools last year, with a total of 2,700,000 students participating. The students of Memphis also purchased more than 2,600,000 extra half-pints of milk for a nickel, thanks to USDA subsidy.

With this background I will mention three ways we are utilizing soy protein in our school system: Astrofood, preportioned meat entrees, and textured vegetable protein (TVP).

### ASTROFOOD

Our experience with a conventional breakfast program was not too successful. During 1968-69 we served a conventional breakfast with outside agencies paying the labor to prepare the breakfast; however, they would not continue their support in 1969-70.

The Memphis City School System's experiment with Astrofood has proven to be a worthwhile experience in our economically needy schools. This program began in March 1970. Astrofood is a small cake which offers substantial amounts of the same nutrients as 4 oz. orange juice, one whole egg, two pieces bacon, one pat butter, and one piece bread.

Participation in a conventional breakfast program was a problem. In February-April 1969, we had 4457 students receiving free and reduced lunches in 15 schools that were operating a breakfast program, but we only served an average of 1236 breakfasts. The ratio of breakfasts served to free and reduced lunches served was 1:3.6. The Astrofood breakfast for the same months in 1971 averaged 19,277 in schools feeding 24,283 free and reduced lunches, a ratio of 1:1.25. Student acceptability was much greater for Astrofood and milk than for the conventional breakfast.

Students seem to enjoy the alternated flavors of the Astrofood each day; they have not become burned out eating the same food each morning. One whole Astrofood cake is too filling for most primary grade students. They cannot eat the cake and milk for breakfast and then eat all of their Type A lunch 3 hr later. This has created some problems of lunch scheduling for us.

The attitudes of school personnel are positive toward the program. There was some negative feeling after the program's implementation, because of the eating habits of the children at lunch time. Some teachers felt that the children were eating less lunch. We also have heard the complaint that we are teaching children to eat cake for breakfast. This may be true, but our school system believes the benefits gained from the nutrients of Astrofood far outweigh the possibility of learning poor eating habits. There is strong feeling to see the program continued, either as it is now or else expanded.

### PREPORTIONED MEAT ENTREES

During the 1973-74 school term, we plan to purchase an additional million lb protein foods which are preportioned and precooked and contain TVP. These items, such as Mexican burritos, charbroil beef patties, pizzas, corn dogs, and fish cakes, will be purchased frozen from the vendors ready to heat and eat.

Each day our food service operation uses over 10,000 lb protein foods. Table I illustrates the amount of TVP used in each entree and illustrates why it is essential that fortified vegetable products be permitted to be formulated with our meats. The cost of these food items would increase greatly if TVP were not permitted.

### TEXTURED VEGETABLE PROTEIN

With a budget allocating only \$.30 food cost/meal and with limited Type A selections dictated by student acceptability, ground beef or ground pork entrees are used most frequently. Last school term beef and pork made up 45% cycle menu entrees.

In February 1971, the USDA permitted TVP to be used in school lunches but only in a 30% or less rehydrated ratio. This permits us to mix one part TVP, and two parts water with seven parts ground beef or pork.

In entrees such as pizza, chili, and meat loaf, we use fresh beef or pork. In our school system we have chosen to formulate the meat and TVP in each cafeteria, rather than have it mixed by our vendors; many other school systems have it mixed by the vendor. Site formulation has not created any problems for our personnel. TVP is soaked in warm water for ca. 15 min then blended with the fresh meat. We purchase the unflavored TVP, so it can be used with either beef or pork.

We warehouse TVP in 30 lb cartons for \$.383/lb, dry product. Rehydrated the cost is lowered to \$.128/lb.

If ground beef and pork are available, we would buy ca. 360,000 lb this school year. One of the reasons we started using TVP is evident by the prices shown in Table II.

Using as an example September 1973, with beef cost of \$1.15/lb, and extending this by 360,000 lb/year, our cost would be \$414,000. A 30% formula of TVP and water with the beef would cost \$.843/lb or \$303,480. Theoretically, our school system could save over \$100,000 by using TVP with our ground beef products.

There are many soy protein products which are not being used in our program which other school systems are using in their lunch programs. We have tested, or are in the process of testing, such items as enriched soy flour, enriched macaroni, cheese, imitation turkey, and imitation ham. Some of these items probably will be introduced to our food service operation before this school term is over.