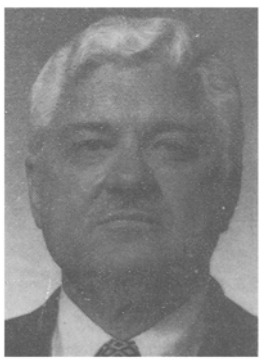
Table IV shows a part of the standards applied when vegetable protein is used for the production of JAS labeled processed foods.

The JAS has been established for newly developed corned-beef-like food. With further developments of products such as soybean milk and vegetable mayonnaise in the future, the JAS will be established. Thus, the creation of new, problem-free food products to be used by consumers will be achieved by common efforts of the government and producers.

TABLE IV

Permitted Levels of Use of Vegetable Proteins for Standardized Processed Foods in Japan

	Level
Pressed hams	<3∿5% as binder
Sausages	<5∿10%
Fish sausages	<20%
Kamaboko	<8%
Minced meat products	<20∿40% as meat extender



What's Holding up the Introduction of Soya into the Human Diet in Latin America?

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ABSTRACT

The introduction of soya into the human diet in Latin American countries suffers the same problem as foods with similar characteristics. The private industry soon finds that it is much easier to put "fun foods" into the market than it is to try to enrich a product and advertise the fact. Getting involved with the "heavy" subject of nutrition means having difficulties with the health authorities. There seems to be no national nutrition program working in Latin America that is truly effective in alleviating malnutrition. Causes for failure of programs are: substantial funding is spent in research, scientists work hard to solve malnutrition, then someone or something actively opposes introducing new soya technologies or there is an effective argument that a national program cannot be based on imported products. With a world population of 4,000 million and growing at a daily rate of 200,000, food and nutrition must have top priority in national planning.

"A certain important dairyman in the Bajío (México) area ordered his cowboys to give away milk generously to all the homes of the farmers on the ranch. One day he visited some of the homes, unannounced, and found the children drinking bottled soft drinks, while the give-away milk was used to fatten the hogs." The author, Carlos Loret de Mola, writing for *Excelsior* in April 1980, goes on to say: "to change the nutritional habits is to work for very patient giants. Yes, this requires the sum total strength of educators . . ." This editorial on the S.A.M. states that 20 million Mexicans go hungry every day.

Each of us has heard similar anecdotes in our own countries. Pedro Bleyer, from Santa Cruz, Bolivia, recently informed me that his excellent cereal product, "Maisoy," continues to struggle against the other major, and less nutritional, cereals which advertise everywhere from Disneyland to nationwide television. Children literally force their parents to purchase "X-Munchies" because they have fancy packages or contain prizes inside. In spite of the competition, Pedro continues to manufacture his nutritive product and slowly is carving out his share of the cereal market in Bolivia, much to the benefit of Bolivian children. Perhaps if Pedro would hire a team of Madison Avenue advertising geniuses and pay them a small fortune, he could increase his share of the market, but would it be worth it? I doubt it.

Before any new product is put on the market, it is test-marketed for months or years and the real advertising money only goes to the sure winner. The consuming public seldom buys a product because it is nutritional or helps produce healthy bodies. In Mexico, a large-scale manufacturer of snack items has a formula for an excellent high protein snack food but he does not want to get involved in the "heavy" subject of nutrition. He informed us: "We make fun foods that people like because they taste good." The advertising always stresses the "crunch" or the flavor, or that they have such a good chile that you go "oop!" when you taste it. They make no claims for nutrition and therefore never have trouble with the health authorities.

Why do the FDA or "Sanidad" people place such strict controls on nutritional claims for food products? They insist on months or even years of testing products on rats to prove that "Super Protina" actually furnishes the nutritive value claimed, even though it is now generally accepted that what is good for fast-growing, hairy rats, is not necessarily required by human beings. We do know that any amount of extra protein that is given to a growing child will be beneficial. So why place difficulties in the path of those who enrich their product and wish to advertise the fact? Why can't they use the term "instant breakfast" and advertise the fact that their product is a better one instead of losing sales to the "junk" foods? Our friends in the health departments say they must protect the consuming public against false claims. Moral: if you want to sell in any market with a minimum of problems and maximum profits, manufacture "fun" foods, make no health claims and aim your advertising at the most vulnerable sector of the market, the children. They can be counted on to spend their lunch money

on your product which has only "empty calories."

Let's look at some of the failures in trying to get soya products or any nutritional product introduced, some of which have the force of law behind the efforts. In 1975, Brazil tried a law requiring 3% soya flour in all bread and baking products. The law was never enforced because the flour millers, as well as the bakers, refused to comply. Why? Because they did not want to give the public a good, healthful product? I do not think so. Because the bread was unprofitable? No, because it was all subsidized. Because it would require some changes in the manufacturing process and add some extra work? This is the most likely reason. The bases for the law were excellent: to give the people better nutrition and to reduce wheat imports by over 100,000 tons/year.

In Colombia in the early 1970s, it was required to add 10% soya flour to bread. The flour was not blended with the soya and the small separate package of soya flour was taken out, thrown away or sold. The regulation was not enforced because the bakers refused to cooperate. In Mexico, 60% of the soya flour used for human consumption is used in bakery products. Our bakers use soya flour for its functional properties, not for nutritional value. They may not understand nutrition, but they do understand moisture retention, longer shelf life, more even browning, better texture and better color. Also, they understand economy when they can partially substitute for eggs and milk in dessert breads and cakes using soya flour, enabling them to sell their product cheaper without affecting either profits or nutritional value. They have a minimum of problems with the health authorities. Therefore, we see successful sales of soya flour to bakers and a bright spot in the otherwise rather dull picture of soya for human consumption.

People respect bread. It is the "staff of life." It is used in religious ceremonies. Children have been wasting precious milk in milk squirting fights. They have been seen throwing away protein-enriched candies and other manufactured products. But if they do not eat the bread, they usually save it and take it home so someone will eat it. We in Latin America should take lessons from the Nutri-Bun program in the Philippines. Soya-enriched bread is generally acceptable by all levels of society, it is easily transported over long distances and is relatively durable.

What about soya-based beverages? We have seen and tried dozens of formulas. None so far invented meet the three requirements for success: (a) it must taste good; (b) it must be sediment-free; and (c) it must be cheaper than cow's milk (which is quite impossible, because the little soybean bush cannot do what a cow does). In Mexico, Conasupo has steadfastly refused to use soya protein as a milk extender even though it can be used at the 6-8% level without being detected. In Mexico, milk is politics; after all, we are short 3 million liters a day, and unless a formula can be found whereby at least 25% of the milk powder can be substituted, they refuse to run the risk of making the public angry. At 2% substitution, the soya is absolutely undetectable and millions of pesos can be saved each year.

In several countries, efforts to introduce a soya beverage have been successfully blocked by the dairy people who mistakenly view soya products as competition. When I was in Brazil in September 1978, I was told by friends at ITAL that a new soya beverage plant at Sao Paulo had been closed by authorities in Brasilia who prohibited the use of sugar, coloring or flavor in the manufacture of the beverage. You can use any of those ingredients mixed with plain water and sell it, but try to do it with some nutritive, protein-based substance to improve the diet and you will meet resistance.

In Mexico, Manuel Rojo has invented a so-called mechanical cow, which converts whole, cooked soybeans into a milk-like beverage with a minimum of waste. It is a two-step system with batch cooking and a continuous, sealed machine that is both a colloid mill and homogenizer. The product is to be sold in liquid form, flavored, refrigerated and sterilized. I am not sure that Rojo will be allowed to market his product in Mexico if the dairy interests consider him a threat.

The Coca-Cola Company is test marketing a bottled, high-protein beverage called "Sanson" in Queretaro, Mexico. The orange and mango flavored soft drink is fortified with cheese whey which has a slightly sour flavor that is noticeable if the bottle is not well chilled. We understand their success has been limited. Soya protein isolate or concentrate could have been used with no flavor problem, with lower cost and equal nutritional values. However, approval from health department officials would have been more difficult to obtain, if not impossible. Animal protein products still enjoy more favor in the minds of some leaders in nutrition, and they seldom look at economic factors.

Some persons think that local governments are blocking the use of soya in human nutriton. Let's look at the roles that governments play, and we can ennumerate four possibilities.

First, the government may be opposed to the introduction of new technology in nutrition. Second, the government may not be interested in nutrition in one way or another, meaning it remains completely neutral. Third, the government may be interested and may even take charge of the development of new technology in nutrition. The fourth possibility is that the government is not only interested in improving nutrition and does whatever is necessary, but also encourages all types of development of new technology in foods.

I think you will agree that none of the governments in Latin America fall into the first category. I think you will also agree that none falls into the fourth category. That means, that all the governments fall into the second or third category. They pay only lip service to nutrition, spending all the nutrition money they set aside in their budgets for "surveys." These "surveys" always turn out the same way: yes, there exists malnutrition among the population and something must be done about it. Only in rare instances do the governments actually take some positive action and even then only on a limited scale. I know of no national nutrition program in Latin America that is working or that is truly effective in alleviating the problem of malnutrition among the underprivileged sectors of the population.

Here are some more examples of the failures: we already have mentioned two of them in Colombia and Brazil where it was decided to compel the bakers to enrich bread with soya. W.M. Hoover selected several countries in the world for a pilot program of mixing soya flour with the wheat flour in the mills. In Latin America, I think he worked actively with the governments of Ecuador and El Salvador, which are smaller countries with fewer flour mills to control. Even so, neither of these nations ever made the program work. The bread program in those countries were never implemented and several reasons were given: lack of production of satisfactory quality soya flour; lack of cooperation on the part of the bakers; off-flavors. Where shall we put Brazil, Colombia, Ecuador and El Salvador? I suggest category three, but with no follow-up.

Let's take another look at Mexico, which also falls into category three. In 1972, the Baker's Association actively campaigned in Mexico for a soya enriched "Bolillo" in order to raise the controlled price for that item, considered a bread "of the people." They got the price raised without

the 10% soya enrichment, and that's as far as it got. However, during the promotion, the Mexican bakers learned a lesson in the use of soya flour in bread baking: they could improve their product and make more money. The average baker is not interested in nutrition and health. He is interested in producing a quality product and in making a profit.

Let's look at the lowly tortilla, the very backbone of nutrition in Mexico and Central America. It is also a "sacred cow" that must not be touched. Bressani, Elias, and Urrutia at INCAP and Perez Villaseñor and del Valle of Mexico all proved that you can add soya to the "nixtamal" (lime-treating) process and raise the nutritional value of the tortilla greatly. We have proven that 6% raw soya seed blended with the corn raises the protein content by about 30%, plus improves the real food value of tortillas due to enhancement of the essential amino acid balance.

INCAP, which has done as much as any other nutrition institute in the field of research in human nutrition, showed with their experiments that Guatemalan children did not show much effect on their growth, height or weight due to enrichment of the corn tortilla with soya protein; however, they found very subtle positive results. They found positive changes in the resistance of the children to illnesses and the effects of illness on the children. How can we be so sure that all the evidence is in on the human need for protein?

Actually, we have found persons or organizations within the Mexican government that fall into the first category, i.e., that are actively opposed to the introduction of new soya technology. In 1974, the National Nutrition Institute of Mexico worked with the government slaughterhouse, Industrial de Abastos (IDA) to introduce two products of a blend of meat with texturized soya protein (we now call TSP "soycina") at very low prices. A cooked product not needing refrigeration called "Proteida" and a frozen, raw, ground-beef-roasted product called "carne MOL-IDA," both enjoyed success, but the MOL-IDA product was more popular with the public. When the administration changed in 1976, the program was selling some 30 tons/day but was cancelled by the new director, ostensibly for the reason that it was unprofitable. Privately, however, we heard the new director said the IDA was in business to sell meat and not soya. This was very unfortunate, because many poor families were getting at least some meat into their diets. Also, it can be demonstrated that a low-priced item such as MOL-IDA can actually increase the sales volume of red meat. We have hopes that the MOL-IDA program will be reinstated under the new administration.

A look at some of the other countries in Latin America shows the following in the second category: Guatemala, Nicaragua, Honduras, Panama (in spite of the existence of INCAP in Central America), Haiti, Guyana and Bolivia. In the third category, again, we find Costa Rica, Jamaica, Dominican Republic, Trinidad, Venezuela, Peru and Chile.

Let us examine the record of those countries we have placed in the third category. Costa Rica has been consuming soya-enriched tortillas for years, from a flour originally imported from Mexico. A program of nutrition based on soya is being actively pursued by CARE and private industry in a government subsidized school lunch program. The same applies to Venezuela, where Werner Jaffe was successful in getting 8% soya flour introduced into the arepas furnished to children in the school lunch program. Jamaica, the Dominican Republic and Trinidad are included in category three because all have studied and are studying the possibility of establishing a program of meals for students and have actively supported interest in soya as a protein supplement.

Peru has tried, within its economic possibilities, to improve the nutrition of its people and has established the Institute of Agri Industry Research under the leadership of Miguel Fort. Private industry is marketing whole soybeans in 5-kilo bags with cooking instructions. Peru is a major consumer of sausages and second only to Italy as a consumer of pasta or spaghetti and macaroni, both of which have been investigated for soya enrichment.

Since 1971, Chile has had a school lunch beverage called Fortesan, made from wheat flour and soya flour by a formula developed by Fernando Monckeberg. Also, private industry markets a soycina-beef mixture called Protesal. Monckeberg will be the first to agree that we cannot always rely on governments to act in the interest of child nutrition and has organized his own nonprofit system of 30 child nutrition centers called CONIN (Corporacion para la Nutricion Infantil). He depends on revenue-generating activities of dedicated volunteers and has been a real success story. He uses soya products regularly in his nutrition program in CONIN.

I do not mean to imply that private industry has not blocked the introduction of soya foods in Latin America. In practically every case we have investigated, the industrialists say: "All we need is the market; we can produce all the soya flour the country needs." On the other hand, the governments say: "We cannot introduce a soya-based program for nutrition unless there is adequate local production of soya products, otherwise we will force prices up." This vicious circle is one that is hard to break. The governments must encourage investment. They must utilize these new technologies in institutional programs. The real breakthrough in the U.S. was the inclusion of the new soya and other "Soycina" technologies in the nationwide school lunch program. This provided the initial incentive to invest in new processes and research, and started the entire meat analog development. Recently "Soycina" and other soya products have been introduced into the rations of the U.S. armed forces. The important point is that the government programs have stimulated industrial development and now the consumer market is the largest even for soya.

Another point made by many governments and nutritionists is that we do not need more protein; we just need more of the same food we consume. And their most familiar refrain is: we cannot base a national program for nutrition on imported products. The governments and industry import all the grains and oilseeds necessary to sustain the animal feed industry but wish to import none to feed human beings. Japan imports 1,000 million dollars worth of soybeans each year, the same amount in corn, and 500 million dollars are spent on wheat imports. Germany imports 3.6 million tons of soybeans and 1.8 million tons of soya meal. Taiwan imports 1.1 million tons of soybeans. Korea imports 422,000 tons and Canada buys 180 million dollars worth of soybeans. Mexico has purchased the equivalent of one million tons of soybeans so far this year. Does this look like governments are unwilling to import food?

The time is near when governments will rise and fall according to the way they feed their people. The ancient Romans bought votes and power with bread and circuses. With a world population of over 4,000 million and growing at a rate of 200,000 daily, food and nutrition must become top priority items for the governments to consider in national planning.

Governments cannot force people to eat "nutrition," because the majority of the people are not nutrition-minded. Poorer people will not eat specially prepared "poor people food," even if it is free. They want to eat what rich people eat. And last, but not least, the only way to introduce a new food is to provide an economic motive to the

food service industry so that they will blend the new, cheaper food with existing, well known dishes. It is imperative to request the blessing of the government, if not their active participation. We believe that surely, by now, we have no governments that refuse to accept soya products as healthful and nutritious foods for human consumption.