

Regulations Governing the Use of Soy Protein in Meat and Poultry Products in the U.S.

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ABSTRACT

There is much interest today in a greater use of vegetable protein in the human diet. Soy protein products currently are approved for use at low levels in over 30 different kinds of meat and poultry foods in the U.S. Recognizing a need for more flexibility in formulation of products under its jurisdiction, the Federal Meat and Poultry Inspection Program of the U.S. Department of Agriculture has proposed several changes in its regulations. They variously define terms, describe types of vegetable protein products, and would permit use of such products in many meat and poultry foods provided the labeling was descriptive and adequately reflected their presence. In addition, the Program would require compliance with nutritional equivalency parameters where vegetable protein was substituted for animal protein in traditional meat or poultry foods. Comments received from the regulated industry and the consuming public on these proposals are being reviewed and evaluated to develop a set of final regulations. Though they will result from the best information available, these regulations still will be subject to change as new data are developed. Because combinations of animal protein and vegetable protein appear to be taking on greater importance for the future, the U.S. Department of Agriculture's Meat and Poultry Inspection Program will work with the meat industry, various segments of the agricultural community, and other interested groups to encourage greater innovation in the use of total protein resources.

INTRODUCTION

We come together for this Conference at a challenging time. It has been just a few years since excessive dietary levels of fat and cholesterol were receiving the greatest share of attention in regard to human nutrition. While these are still important, today's spotlight is focused upon the relative scarcity of animal protein worldwide and its effect upon nutrition. With an increasing population and with increasing competition for land usage, there is general agreement that vegetable protein sources—and the primary source at present is soy protein—will have to be used to a greater extent to substitute for or augment the short supply of animal protein. Such usage of vegetable protein will not only improve the number of sources, but also will permit some flexibility in filling protein needs. All of this ultimately will lead to more stability in the supply of protein for world consumers. In the U.S., the introduction of greater levels of various vegetable proteins into meat and poultry products is having a considerable impact upon the Department of Agriculture's (USDA) Meat and Poultry Inspection Program.

There is a distinct separation of authority for food inspection in the U.S. between USDA and the Food and Drug Administration (FDA). The USDA administers the Federal Meat Inspection Act and the Federal Poultry Products Inspection Act. These laws are designed to assure that meat and poultry products are wholesome, properly

prepared and packaged, and correctly labeled to inform consumers. In carrying out these responsibilities, USDA regulates all ingredients used in the preparation of meat and poultry products, including vegetables, sauces, additives, and other substances, such as soy protein.

Labels for federally inspected products must receive prior approval before they can be used. The approval process requires that formulations and the method of processing be disclosed to USDA to assure the label is appropriate for the product. Data accumulated from approved labels, with regard to ingredients, their amounts, and processing methods, are used to help establish standards for meat content, extender limits, fat and moisture limits, or other product parameters to assure that product identity and uniformity are maintained. In the case of soy products, information on the types used in product formulations, as well as frequent reviews of the various products, have served as the basis for regulating the types of soy permitted and for determining the effect they have had on finished food products.

PROGRAM HISTORY IN SOY PROTEIN PRODUCTS

The Federal Meat and Poultry Inspection Program has a long history of dealing with the use of soy protein products in foods subject to its regulations. For more than 40 years, up to 3 1/2% soy flour has been permitted as a binder in cooked sausages, such as frankfurters and bologna. Soon after its initial use, soy flour also became a frequent ingredient in chili and later in meat patties, due to its ability to bind moisture and fat, thereby helping to stabilize the product.

By 1962 soy protein concentrate had been developed and was permitted as a binder at the 3 1/2% level in frankfurters, bologna, and similar sausage products. Two years later, two different products were approved as ingredients in products under our inspection. In 1964 isolated soy protein was found an economically feasible binding ingredient in cooked sausage at a level of 2%. Later that same year, textured soy flour was introduced as a food ingredient and began to appear in meat patties, chili products, stews, and pizza toppings.

By 1966, the Meat and Poultry Inspection Program had become aware of another soy product—isolated soy protein fibers—produced by an extrusion process. These fibers, when combined with isolate powder, ground beef, coloring, and flavorings, could be processed and dried in the shape of a strip of beef. This, to my knowledge, was the first instance of the blending and forming of a mixture of meat, soy fibers, and soy powder to produce unique food materials that appeared to be entirely meat. Soon thereafter, products resembling ham chunks and turkey chunks were developed from the same ingredients.

By 1968, complete soy analogues of ham, beef, turkey, and chicken were used as meatlike ingredients, in addition to the meat itself, in ham, turkey, chicken, and corned beef salads. It was in this sort of product that the need for limiting certain types of vegetable protein was first recognized. Soy analogues used along with the ham, chicken, or turkey in these salads could make the product appear to contain significantly more meat than was actually there.

TABLE I

Proposed Levels of Usage of Large Particle Textured Vegetable Protein in Meat Products

| Product class | Amount, percent | Examples |
|---|-----------------|--|
| High meat products not including sausage | 5 | Meatloaves for baking, meatballs, meat toppings for pizza, salisbury steak, patties |
| Meat with gravy or sauce | 4 | Beef and gravy, beef burgundy |
| Sauce or gravy with meat | 3 | Chili, gravy with beef, barbecue sauce with beef |
| Meat salads or hashes | 3 | Ham salad, roast beef hash |
| Sauce or gravy with meat and vegetables | 2 | Beef pie, chili with beans, beef stew |
| Starch (pasta) or beans with meat in sauce | 1 | Spaghetti with meat in sauce, macaroni with meat in sauce, chili macaroni, beans with bacon in sauce |
| Meat sauces | 1/2 | Spaghetti sauce with meat, chili sauce with meat, hotdog chili sauce with beef |

Under our law, this would be a deceptive practice and could not be permitted. Thus, labeling requirements and limits on the quantity of analogue used became necessary to prevent deception and to help inform consumers of the exact nature of these products. Out of this evolved the policy which permitted use of small amounts of analogues or textured vegetable protein without identifying its presence in the product name—the textured soy protein was identified in the ingredient listing only.

Industry soon began asking, "How much textured vegetable protein can I use before it becomes deceptive?". To answer this question, we conducted studies with various levels of textured soy protein added to meat products. Chili, which has a 40% meat requirement, provided an excellent medium for studying the addition of textured soy protein products to determine the effects of both particle size and quantity on product. It was our intent to ascertain at what levels finished product changed in character and took on the appearance of having more meat than was really present.

Our studies showed that up to 3% textured soy flour could be used in chili without significantly altering finished product characteristics. As a result, this level was permitted to be added to formulations for chili products with declaration in the ingredient statement only. Labels for chili containing more than 3% textured vegetable protein read "chili—textured vegetable protein added" or "beef and textured vegetable protein chili." The latter name is used with the higher levels of textured vegetable protein which, when hydrated, would be in ca. equal proportions to the cooked meat in the finished product.

Studies with chilis, meat stews, meat sauces, and barbecue sauces with meat led to the development of a labeling policy based upon the relative quantities of fresh meat to dry soy analogue in the product formula. For products in which the fresh meat to dry soy protein ratio is greater than 13:1 (13 parts fresh meat to 1 part dry soy protein), the label need only reflect the soy protein in its proper position in the ingredients list. For products with ratios between 13:1 and 10:1, the label should bear a qualifying phrase that reads "textured vegetable protein added" or similar wording. For products with formulas having ratios of less than 10:1, e.g. 6 1/2 parts beef to 1 part dry textured vegetable protein, the label should bear wording that equates the textured

vegetable protein with meat ("beef and textured vegetable protein stew" or "textured vegetable protein and beef chili sauce").

PROPOSED CHANGES IN REGULATIONS

Last May, USDA announced several proposed changes to its meat inspection regulations, one of which was to define textured vegetable base ingredients and to clarify the restrictions on their uses in meat products. The proposal defined a textured vegetable product as "that product made from processed plant protein fit for human food that is characterized by having structural integrity and identifiable texture so that the individual formed units will not be reduced in size by hydration, cooking, or retorting processing." Large particle textured vegetable protein was defined as being composed of particles that would not pass a 16 mesh screen.

The May proposal on use of textured vegetable products in meat foods would require the products to contain their required quantities of meat but would permit the use of textured vegetable product to replace part or all of the plant base or dairy base materials that are common or usual in any product within a specified class of product. The proposal also would permit use of a large particle textured vegetable product in seven broad meat product classes, as indicated in Table I, without declaring such an ingredient in the product name.

The USDA received numerous comments on this proposal. Most indicated dissatisfaction with one or more points of the proposal. Consumers want the word "soy" in the soy product name. They believe that the words "textured vegetable product" are not sufficiently informative and meaningful. Furthermore, these soy ingredients presently are not sold at retail nor are they used by housewives in preparing foods in the home. Thus, the consumer is not completely familiar with the meaning of the term being proposed for use. Food processors and their suppliers, in their comments, questioned the need to describe a minimum particle size in the definition of the word textured, and some questioned the need for any labeling policy in meat products. All comments will be evaluated carefully before final ruling is instituted.

Another proposal which was published in May had to do with labeling which would be used on new food products

which imitate traditional or established meat food products. This is a subject area that often has posed problems in the regulatory Program in the past. It is also a subject in which there is intense interest at the present time, an interest which goes back several years and which seems to have increased significantly in recent times. In 1969, the U.S. President convened a White House Conference on Food, Nutrition, and Health. During the deliberations of this conference, a major need was voiced for the development of acceptable, descriptive labeling for food products which were imitations of traditional established foods. The laws under which both the FDA and the Federal Meat and Poultry Inspection Program function require that foods which resemble and purport to be other foods must be labeled with the term imitation. However, we feel that imitation labeling is negative labeling. It does not indicate the nature of the product but rather says what the product is not; and, as has already been noted, the word imitation carries with it a stigma of inferiority.

As a result of the recommendations which came out of the White House Conference, along with a growing recognition within our Program of a need for more expressive labeling for the large number of new products, we published the May proposal to change our requirements for labeling of imitation products. This proposal would permit frankfurter-like products to be labeled either with a fanciful name or be labeled with a descriptive name which simply would identify the nature of the predominant and characterizing ingredients. For example, such a product might be called "meat and soy protein concentrate stick." An ingredient statement declaring the percentage of each ingredient also would be required. As can be seen, this sort of labeling tells exactly what the product is and yet fulfills the requirement that it be distinguished clearly from the traditional product which it resembles.

This proposal also would require that the quality and quantity of protein and the quantity of minerals and vitamins in the imitation product be within the range of 90-150% each of these nutrients in the product it resembles. The public comments which were submitted generally favored the proposal but objected to the requirement for nutritional equivalency and a demonstration of this equivalency. There was particular concern expressed over the requirements for assurance of protein quality and levels of minerals and vitamins and the need for percentage labeling of major components in the product. All these comments are being reviewed and considered at the present time; however, we feel strongly regarding the need for maintenance of nutritional equivalency and the demonstra-

tion thereof before permitting these products to be manufactured and distributed as substitutes for traditional products.

GROWING NEED AND USAGE OF SOY PROTEIN

Soy protein products now are being used in more than 30 different types of meat and poultry products inspected by the USDA. Present day formulations reflect the growing usage of textured or structured soy protein ingredients. They are being used in a wide variety of products, including soups, meat sauces, stews, salads, meat patties, loaf products, and many others. In addition, there has been introduced, at the retail level in the U.S., blends of ground beef and hydrated textured vegetable protein which are extremely well received by consumers. As a result, the consumer is becoming more aware of the uses being made of textured vegetable protein in the food supply. For this reason, we believe that there will be an increasing use of vegetable protein ingredients in what have been previously traditional meat products. This should permit a reduction in the total cost but, at the same time, not affect appreciably the nutritional quality of the product.

It is this latter point that I would like to emphasize in concluding my remarks. The USDA is dedicated to working with the agricultural community to develop and maintain the highest level of production of all food products possible with existing technology. Where, in the present instance, animal protein is in short supply, vegetable protein can be turned to as a complementary source of protein which will effectively extend the total protein resources for the consuming public. In our Meat and Poultry Inspection Program, we have a strong commitment to consumer protection which means that, where vegetable protein is substituted to some degree for the animal protein portion of a product, we must be certain that the consumer is not confronted with a product which is inferior or is inadequately labeled. It is for this reason that we have published proposed regulations dealing with the use of these ingredients in meat and poultry products. Our final regulations will reflect the best information available, but even they will be subject to change as new data are developed which might require a reevaluation of the entire situation. Throughout, we will be working closely with the industry we regulate and other interested groups, encouraging greater innovation in the use of animal and plant protein resources. It is our belief that such combinations are going to be of growing importance to the world's diets in the future.