

Processing Herbal Foods

BOTANICALS AS FOODS

The term "herb" is generally used to mean the leaves of any one of a number of plants that grow in temperate climates. They can be found at various times of the year, depending on the herb. Many of these plants are reputed to impart special benefits to the user.

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With a few exceptions, herbs have not been widely used in the food industry. The 1960s saw a growth in the popularity of herbal teas and a number of entrepreneurs began businesses producing them. In the 1990s the trend continued with rose petals used in sorbet, kudzu blossoms added to jelly and even

an attempt to use mistletoe juice. (By the way, mistletoe juice is toxic!)



Herbs are reputed to impart special benefits to the user.

As the examples above indicate, the use of botanicals as food is not always simple.

Considerations must be given to a variety of factors from the safety of the herb itself to the selection of the appropriate processing procedure.

A botanical is a medicine or preparation made from a plant. Many botanicals have a history of medicinal use, but little or no history of food use. One visiting a market in China or Hong Kong is struck by the array of carefully preserved botanicals. Folk healers worldwide have relied on botanicals throughout history and instructions for their use are often passed down from generation to generation.

The Food and Drug Administration (FDA) takes a couple of approaches to dealing with these products. First, those products for therapeutic use fall under drug provisions of the law. However, just removing the therapeutic claims may not automatically allow a product to be considered a food. FDA has tried to take the approach that, to be considered a food, botanicals must have a history of "common use in food" in the U.S. This standard, however, was struck down in 1983 when a court ruled that FDA could not limit the food's common use to consumption in this country alone.

A botanical is classified as generally recognized as safe (GRAS) if it has a history of use in food that predates 1958. A GRAS affirmation means that the material can be used in food based on its historically established safe use. A botanical with no history of common use in food prior to 1958 requires a food additive petition to FDA.



It is a good idea to determine if the material to be used is eligible for a GRAS affirmation from FDA. To do this, the FDA must be provided with the proper botanical identification of the plant by genus and species, information concerning the specific part of the plant used, the amount and method of consumption and documentation of the history of consumption prior to 1958. FDA will determine if there are reported adverse effects associated with consumption of the substance, including long-term toxicity or carcinogenicity. This history of use in food must show that the plant was used as a food ingredient, not as a drug, tonic or folk remedy. Essentially then, the burden of determination of safety for GRAS foods is on FDA.

A person wanting to use a botanical may choose to make an independent GRAS determination – that is, to use the product based on their own opinion of its safety – without gaining FDA approval. Choosing to proceed based on an independent GRAS determination without FDA concurrence, runs the risk that the substance may be found not to be GRAS and thus be an illegal food additive.

The method of consumption of botanicals is important. An old adage says “the dose makes the poison.” Consumption of small amounts of these products may cause no ill effects to public health. However, greatly increasing consumption, making an extract or using another part of the plant may change the safety of the product. Assessing this hazard is expensive and time-consuming. It can be assumed that a change in the form or method of use would require filing a food additive petition to FDA.

SPECIALTY PRODUCTS

In recent years, there has been an increase in interest in specialty products made with herbs. Such products include:

- Herbs in vinegar
- Herbs in oil
- Pesto

The popularity of these products can be attributed, to a large extent, to increased consumer interest in healthy eating. This has led many people to include more pasta and other low-cholesterol alternatives in meals. At the same time, those who are attempting to follow dietary recommendations to use less fat, salt and sugar are looking for new flavors to add interest to foods.

HERBS IN VINEGAR

Herb-flavored vinegars have become popular for use on salads and meats. In addition, many companies have put these types of products in fancy bottles which consumers think are pretty sitting on a counter.



Fancy bottles on store shelves attract consumers to herbs in vinegar and oil.

Vinegar is considered an acid food. The definition becomes more complicated as herbs, which are low-acid foods, are added to it. The product may still be considered an acid food as long as only a sprig or two of herb are added to the vinegar and (1) the herb becomes acidified throughout, and (2) the herb does not contribute a change in the acidity of the vinegar. However, as the amount of low-acid food (the plant material) increases, it begins to have an effect on the acidity of the vinegar. At this point, the product is no longer a “vinegar” but an acidified herb.

This is an important distinction for several reasons:

- The public health implications of acidifying a low-acid food (acidified herb) are greater than simply packaging an acid food. A mistake in the proper acidification could allow the development of botulism, a deadly disease.

- The rules governing the processing of acidified foods (21CFR 114) are much more complicated and the processing more costly than for acid foods. The product will require a scheduled process submitted to FDA and will have to be processed under the supervision of a certified supervisor who has successfully completed a course at an FDA-approved school. As an alternative, the product can be refrigerated or frozen.
- The acidity of the product may require monitoring using an electronic pH meter to assure safety.

Regardless of whether the final product is an herbed vinegar or an acidified herb, it is necessary to make sure the plant material is submerged in the vinegar long enough to become acidified to the point that its internal pH is 4.6 or below.

HERBS IN OIL

Another popular product category is oils which are flavored with herbs. Many of these products, which may be described as being ethnic in origin, have appeared over the years. Common ones have been garlic and pepper packed in oil. FDA has found that the toxin which causes botulism can be produced in these products.



To prepare peppers safely, they must be acidified prior to adding the oil.

To prepare these products safely, they must be acidified prior to the addition of the oil. This causes them to be classified as acidified foods and to be required to meet the processing requirements for this type of product. These requirements state that the process conditions must be established by a recognized process authority. Processing of these foods should not be done without adequate controls in place that have been established by knowledgeable individuals.

Probably due to the increase in pasta in the diet, pesto, a blend of herbs in oil, is becoming more popular. These products have hazards similar to those described previously for individual herbs in oil and must be processed using the same guidelines. A possible process alternative for pesto is freezing.

From a food safety point of view, it is necessary to make the consumer aware of the hazards of refrigerated and frozen pesto. Botulism is a hazard which may develop in oil-coated low-acid foods. There should be a warning label reminding the user to "Thaw in the refrigerator, keep refrigerated and discard after _____ (5 days or some reasonable time)." The concern about product safety increases as the product is held for a longer time under fluctuating conditions.

Shelf life also may be a problem due to active enzymes in the herbs which break down the tissues. Blanching in steam or water will destroy the enzymes but changes the character of the herbs.

There are several rules for the production of these types of products. The primary requirements are contained in 21CFR 110 which describes the "Good Manufacturing Practices" (GMP's) for production, storage and distribution of human food. These include requirements for preparation facilities, sanitation and protection of the food. The major regulation deals with the GMP's for producing acidified foods (21CFR 114).

HELP IS AVAILABLE

If you are considering entering the food industry with a processed botanical product, you may need help in determining the best methods for handling and processing your product safely. The Institute of Food Science and Engineering (IFSE), Division of Agriculture, University of Arkansas has processing authorities who can assist you in establishing the appropriate process for your product. For information on obtaining help from IFSE, contact your county Extension office.

For additional information, contact your county Extension agent or:

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