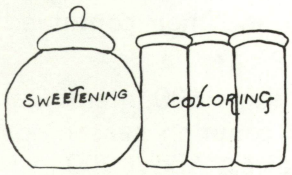
NUMBER 172 CURRENT INFORMATION SERIES SEPTEMBER 1971

Food Additives



prepared by
Esther Wilson, Extension nutrition specialist

There should be neither alarm nor complacency concerning additives to food. Continued responsible judgement and caution are required of those who use chemicals for whatever purpose—that means all of us. No chemicals are harmless; there are only harmless ways of using chemicals.

HISTORY OF FEDERAL FOOD LAWS

Dr. Harvey Wiley, chief USDA chemist, led the fight for laws to protect consumers from impure foods and drugs. In 1902 he started controlled scientific experiments to test the safety of chemcial preservatives. For weeks 12 healthy young men volunteers ate "doctored" foods containing measured amounts of chemicals. The effect on their health was determined.

Sensational and sometimes exaggerated newspaper stories about Dr. Wiley and his "Poison Squad" aroused the public's concern and support for legislation.

The first Federal Food and Drug Act, enacted in 1906, prohibited adulteration of food and drugs entering into interstate commerce. The law was good for its time; however, with changes in conditions along with advancements in science and technology, it became obvious that the law needed modernizing.

In 1938 Franklin D. Roosevelt signed into law the Federal Food, Drug and Cosmetic Act, which upheld the original act and added new provisions. Standards of identity for food were authorized. Truthful labeling was made mandatory. Enforcement regulations were specified.

However, the weakness soon recognized was that **questionable food additives in use had to be proven unsafe in court before removal from the market was mandatory.**

The 1958 Food Additives Amendment strengthened protection by **requiring that industries prove food additives safe before they are marketed.**

HOW AN ADDITIVE BECOMES APPROVED

Before an additive can be used to improve a food product, it is subjected to toxicity studies by the food or chemical manufacturer and is evaluated and regulated by the FDA.

First, the manufacturer develops a food or color additive and establishes its safety and usefulness. Three kinds of toxicity studies are carried out with chemicals that appear to be useful as food additives:

- Acute toxicity tests to show the effects of a single dose of the chemical given to a sample of at least two species of laboratory animals (often the rat and the dog).
- Short-term toxicity studies (90 days) to show the effects of feeding diets with different concentrations of the chemical to at least two species of laboraory animals.
- Long-term toxicity studies (2 years or more) to show effects of lifetime consumption of the chemical. Analysis of effects on fertility, reproduction and lactation may be required. Metabolism of the additive may also be studied.

Second, the manufacturer files a petition

COOPERATIVE EXTENSION SERVICE
COLLEGE OF AGRICULTURE

AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF IDAHO

with the FDA for approval of the safety of the chemical.

Third, FDA scientists evaluate the toxicity studies and other data provided by the manufacturer. The chemical must meet these requirements:

- It must have a necessary purpose in food.
- It must be safe for humans even if the food containing it were to be consumed daily for a lifetime. Also, it must not produce cancer when fed to either humans or animals.

Fourth, FDA administrative officers write an official regulation for the use of an additive that has been proven safe and useful. The regulation includes the following:

- The kinds of foods in which processors may use the additive. (An additive may not be used in a standardized food unless the standard of identity permits it.)
- The amount of additive that may be used. The law requires that the amount must be the minimal required to produce the intended effect in food.
- Any other conditions necessary to protect the consumer, such as specifications for purity and identity of the additive, and analytical tests for controlling the use of the additive.

CURRENT CONCERNS

Increasing knowledge in biological and chemical sciences stimulates questions about safety of food additives followed by development of improved testing methods.

A few of the current concerns include:

- The application of animal study results to humans.
- The metabolic pathways the chemicals follow in the body; for instance, is the additive metabolized to form a toxic substance?
- How various environmental stresses (including air and water pollutants) may interrelate to affect toxicity of food additive chemicals.
- Whether additives are more toxic to children than to adults.

THE GRAS LIST

Concern also surrounds the safety o chemicals on the GRAS (generally recognized safe) list.

When the 1958 amendment was passed, additives in use before that time were screened. Those that had shown no bad effects were established as GRAS and their continued use was permitted.

The GRAS list includes some 600 intentional additives, including many common seasonings such as vinegar, salt and spices. About 200 incidental additives are also included, bringing the GRAS list total close to 800.

In April, 1970, a review of the GRAS list was initiated. This involves seeking information on the extent of use of the additives, reviewing toxicological literature of the past 50 years and then carrying out additional safety testing on doubtful chemicals.

Under final rules issued June 25, 1971, any substance requiring limitations to assure its safety is not eligible for GRAS status.

Saccharin provides an example of how these safety precautions work. As a result of testing:

- Saccharin was removed from the GRAS list and was classified as a regulated food additive.
- Saccharin content in milligrams per fluid ounce for beverages and in milligrams per serving for foods must appear on labels.
- A limit of 1 gram per day for an average adult is recommended by the FDA.
- Further long-term, low-dose feeding tests are recommended.

Most current users of saccharin will not have to change their intake, however. The average daily intake is about .2 gram and saccharin content of beverages and foods will probably remain at the present level.

Thanks to Velma Seat, Extension Marketing Specialist, Oregon State University, for some of the information used here.

PUBLISHED AND DISTRIBUTED IN FURTHERANCE OF THE ACTS OF MAY 8 AND JUNE 30, 1914, BY THE UNIVERSITY OF IDAHO COOPERATIVE EXTENSION SERVICE, JAMES E. KRAUS, DIRECTOR; AND THE U.S. DEPARTMENT OF AGRICULTURE, COOPERATING.

James E. Kraus

JAMES E. KRAUS, *Director*