



Name

# Food Additives:

To preserve or enhance the value of food

## ***What is a Food Additive?***

- ***Additives are defined to be substances added purposely to food to preserve or enhance the value of the food, or to make it more palatable and without detriment to its safety. There are two types of additives:***
  - **Intentional Additive:** Ingredients purposely introduced to aid in processing or to preserve or improve the quality of the product. Example: sugar, salt, spices, etc...
  - **Incidental Additive:** A chemical that finds its way into a food as a result of its use in some phase of the product as handling, or processing of food products.
    - **Example:** Pesticides, animal hormone (DES), antibodies, packing materials migrate to foods (not added on purpose but got there), toxins, molds, Alpha-toxins as peanuts, corn, and all are regulated by FDA (Food and Drug Administration). Also chance containments as: cockroach or rat droppings, machine oil, etc...
- **An additive is added in small amounts whereas an ingredient is added in large amounts.**

## ***What are conditions for considering safety?***

- **Amount takes to product injury**
- **Amount needed to do what is needed**
  - **Example:** How much antioxidant to keep potato chips from becoming rancid? How much yellow food coloring for desired color of cookies?
- **Amount individual would consume in food (a gluten - to eat in excess)**
- **Probably no substance is absolutely safe!!!**

**EFFICACY:** effectiveness of an additive. Does it do what it is suppose to do?

## **GRAS:**

- **Generally recognized as safe. In 1958 there was a list compiled and judges by experts to get a consensus of opinions on additives. One hundred or more compounds were on the listing.**

## Food Additives

- 1970-1971 President Nixon wanted all components on the list tested again. Double GRAS list was of original list and those tested and passed and FDA confirmed GRAS.
- *Foods not on the original list for GRAS also. First tested those with the greatest potential for being toxic. Example: Vitamins and minerals confirming GRAS quickly: more time - Nitrites and colors - more extensively being tested.*
- *FDA decides if confirmed GRAS. Example: Starch Blockers - pulled off the market.*
  - After testing an additive may be:
    - Affirmed GRAS - lecithin
    - Discontinued, Banned - cyclamate
    - Regulated - saccharin - regulated amounts
    - Holding Pattern - BHA, BHT - allowed to use while additional testing is being done, lots of time and money spent.
  - Delaney Clause or Delaney Amendment: No additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal. This applies to intentional additives only in the United States.
    - NOEL - (FDA - U.S.) - No Observed Effect Level - level or an additive or pesticide, no observed effect in the animal they are testing.
    - ADI - (FAO) - Food and Agricultural Organization - Acceptable Daily Intake.
    - $NOEL/100 = ADI \times 100 < NOEL$
    - Acute Toxicity Tests: given single dose LD50 (Legal Dose) amount of compound that it takes to kill 50% of laboratory animals.

250 mg./kg	2,500 mg./kg
TOXIC	SAFE
    - *Use within 24 hours and follow 7 days*

## Food Additives

- *Must be used in rodents (rats, mice) and non-rodent (dog, chicken)*
- *Intended Route - eaten - oral*
  - *Injected Route - IV, J Tube, G Tube, NG Tube*
  - *Rubbing on skin – topical*
  - *One has to be normal route of administration:*
- **Sub Acute Toxicity - 3 months to observe and give 3 dose levels.**
  - **Must be used on rodents (rats, mice) and non-rodent (dog, chicken) and routes of administration. Also do tests: Physical exam, biochemical evaluation, blood test, fecal analysis, urine analysis, and post mortem exam. Reproductive Tests: Teratogen, Fertility, Behavior, etc...**
- **Chronic Toxicity Tests - 1 to 2 years. Must be used on routes of administration. Very expensive and time consuming.**
  - **Special Tests:**
    - **Carcinogen - chemical irradiation, viruses, immune system - to test for cancer**
    - **Mutagens - heredity, genetic, congenital, mental retardation, Mongols**
    - **Teratogen - birth defects, electron microscope, size liver cells**
    - **Hypersensitivity – allergies**
- **Market Basket Survey - test used routinely with pesticides or with environmental contaminants. Done by USDA every 2 years and is done 5 to 6 months, get one grocery cart and fill with various items and take to lab and test: analyze for pesticides and contaminants to monitor the levels. If pesticides too high? Problem - inspectors not catching: pesticide too much use? How food supply is coming along?**
- **Key to Safety = Quality of Testing**

## What are additives?

- **Preservatives**- extend the shelf time, help with year-round availability

## What do Additives do?

- *Retain crispness, keep mixtures from separating, improves appearance and flavor, to prevent rancidity/food spoilage, retard microorganism growth/food spoilage, raise the nutrient value of foods, protect the formation of cancer-causing chemicals, also is a lower cost to the consumer with safer foods with less waste*

## Facts:

- **3 Most Widely used Additives**- Corn Syrup, Salt, Sugar- Natural
- **Others**- Baking Soda, Citric Acid (Lemons, Oranges), Mustard, Pepper, Vegetable colors - these account for 98 to 99% of all Food Additives in the U.S.
- **Health Food Industry**- has very little regulation, FDA try to investigate harm and quackery, but lacks the time and money to investigate all complaints
- **No proof that the nutrition supplement is SAFE**- can market without FDA approval, need history of use/expected to be safe when used and can also put the benefit it is expected to deliver, label should be truthful and not misleading and label has to tell that FDA has not evaluated the nutrition supplement
- **AVOID**- using nutrition supplements that claim a Miracle Cure, increase strength, muscle growth, sexual enhancement, more energy, wise old remedy

## What can I do?

- **See your Physician or Health Care Provider**
- **See RD-** for help as needed
- **See FFF RD-** on line for help
- **AVOID**- using any herbals or nutrition supplement unless you have talked with your MD and he approves, show your MD your medications

## Quiz for Food Additives:

1. GRAS stands for Generally Recognized as Safety/Sanitation?
2. Efficacy is the effectiveness of an additive.
3. President Nixon wanted all components on the GRAS list tested.
4. Safety is an issue due to know the amount needed to cause harm.
5. NOEL is what we sign at Christmas time.
6. ADI is acceptable daily intake.
7. After testing each food must be put in a category of additives.
8. The Delaney Clause deals with cancer and if a food is safe for consumption or not.
9. Starch Blockers were pulled off the market because they were not considered safe.
10. FDA decides if a food is confirmed safe or not.
11. There must ne 2 routes of administration.
12. 2 routes of administration would be oral and by tube.

## Answers for Food Additives:

1. False
2. True
3. True
4. True
5. False
6. True
7. True
8. True
9. True
10. True
11. True
12. True

# Food Additives

## Education Record for Dietary Department

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Instructor: \_\_\_\_\_

Title: **Food Additives**

Persons in Attendance-sign below- all employees\*\*\*

A synopsis of the in-service includes:

- Food Additives
- Intentional Additives
- Incidental Additives
- FDA
- Safe
- Market Basket Survey
- GRAS
- Goals

Signatures:

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|-----------|-----------|
| 1: _____  | 11. _____ |
| 2: _____  | 12. _____ |
| 3: _____  | 13. _____ |
| 4: _____  | 14. _____ |
| 5: _____  | 15. _____ |
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| 10: _____ | 20. _____ |

Responses and Comments:

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# CERTIFICATE

1 HOUR ON – FOOD ADDITIVES

CERTIFICATE FOR: \_\_\_\_\_

DATE: \_\_\_\_\_

TITLE: FOOD ADDITIVES

BY: FOOD FITNESS FIRST, INC. <sup>TM</sup>

SIGNATURE: \_\_\_\_\_

[www.foodfitnessfirst.com](http://www.foodfitnessfirst.com)

