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News Release

Flavored Oils

Quick Facts...

- Flavored vinegars can be safely prepared. They are best stored in the refrigerator.
- Garlic, vegetable or herb in oil mixtures may support the growth of *C. botulinum* bacteria. For safety reasons, they should be made fresh. Leftovers should be frozen, refrigerated for use within 10 days, or discarded.

Flavored vinegars and oils add excitement to salads, marinades and sauces. They also make special gifts, provided a few simple precautions are followed. Of the two, flavored vinegars are easiest and safest to make. Because vinegar is high in acid, it does not support the growth of *Clostridium botulinum* bacteria. However, some vinegars may support the growth of *E-Coli* bacteria. Infused oils have the potential to support the growth of botulism. These products may cause great harm if not made and stored properly. By following the procedures below, both types of products can be safely prepared and used.

Flavored Oils & Safety Concerns

Infused oils and oil-based mixtures of garlic, herbs or dried tomatoes can pose a health hazard if not kept refrigerated. There have been a number of cases of botulism poisoning traced to commercially and home prepared mixtures of garlic in oil that were not refrigerated. Refrigeration is necessary because all other conditions that favor growth of *botulism* are met: low acid environment, anaerobic conditions (oil), food and moisture source (garlic), not boiled before eating.

Garlic in oil. For added safety, the Food and Drug Administration (FDA) now requires that all commercial garlic in oil products contain specific levels of microbial inhibitors or acidifying agents such as phosphoric or citric acid. Although most garlic products do contain these additives, some boutique or specialty mixes may not. Always check the label to be sure.

As for home-prepared mixtures of garlic in oil, the FDA recommends that these "be made fresh for use and not left around at room temperatures." Refrigerate left-overs for use within 10 days, freeze or discard.

The reason for the concern is that unrefrigerated garlic in oil mixtures lacking antimicrobial agents have been shown to permit the growth of *botulism* bacteria and its toxins, **without** affecting the taste or smell of the products. Toxin production has been known to occur even when a small number of *botulism* spores were present in the garlic. When the spore-containing garlic is bottled and covered with oil, an oxygen-free environment is created that promotes the germination of spores and the growth of microorganisms at temperatures as low as 50 F.

Botulism is a potentially fatal food poisoning characterized by blurred or double vision, speech and breathing difficulty, and progressive paralysis. Without prompt and correct treatment, one-third of those diagnosed with botulism may die. *Botulism* spores are widespread in the environment but cause no harm

as long as oxygen is present. Also, the toxin produced by *botulism* bacteria is readily destroyed by heat. Boiling a potentially suspect mixture for 10 minutes will destroy any botulism toxin that may be present.

Vegetables and herbs in oil. Less has been documented on the dangers of storing whole chilies, fleshy vegetables or herbs in oil, but they, too, are best made fresh, with leftovers stored in the refrigerator for use within 10 days. Vegetables have a high water activity level which further encourages the growth of *botulism* bacteria in an anaerobic environment. Even when dried, there is still the potential for risk.

Dried tomatoes in oil are less of a safety concern than other mixtures in oil because the pH of tomatoes is generally 4.6 or lower. In addition, by drying the tomatoes, conditions become even less favorable to growth of *botulism* due to a decrease in water activity. Dried herbs in oil also are less of a safety concern because of their low water activity. However, to ensure safety, it is recommended that all tomato in oil and herb in oil products be stored at refrigerator temperatures.

Avoid Rancidity

In addition to reducing the potential for growth of *botulism* bacteria, storing flavored oils in the refrigerator helps keep the oils from becoming rancid. A putrid "off" odor indicates the development of rancidity. All fats and oils will become rancid given enough exposure to air, sunlight and heat. Polyunsaturated fats, like vegetable oils, are especially prone to such deterioration. Eating rancid food won't make you sick, but it may be unhealthy in the long run. Rancid fat contains chemicals called peroxides and aldehydes that can damage cells and may even encourage cholesterol to clog arteries.

It is important to note that rancidity and the presence of botulism toxins are not necessarily related. Toxins may be present without any hint of an off-odor. Likewise, an off-odor does not necessarily indicate the presence of botulism toxin. It does, however, indicate the product may have been left for long periods at room temperature, which would promote the growth of *botulism*. *Therefore*, it's best to discard any oil-based mixtures that have become rancid so they're out of the reach of humans or animals.

For more information about this topic or food safety, preservation, or preparation please contact Regional Extension Agent-Angela Treadaway at (205) 338-9416 or (205) 410-3696-cell or email atreadaw@aces.edu.

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