



Food Safety & Preservation: **Herbs and Vegetables in Oil**

SP 50-701, Revised September 2011

It's important to keep food safety in mind when storing vegetables (such as garlic, mushrooms, chili peppers) or herbs in oil. These low-acid foods can be a source of *Clostridium botulinum* bacteria, which are found in soil, water, and air. Oil's oxygen-free environment is perfect for growth of the bacteria. For this reason, herbs and vegetables in oil must be stored correctly to prevent botulism food poisoning.

Commercial garlic-in-oil mixtures are acidified to prevent bacterial growth. These products can be stored safely at room temperature. Unfortunately, acidification of homemade herb or vegetables-in-oil mixtures can't be recommended until research is conducted. Instead, it's essential to store these hazardous products in the refrigerator or freezer.

When raw or cooked vegetables or raw herbs are stored in oil, *Clostridium botulinum* bacteria can grow. These mixtures must be refrigerated to slow bacterial growth. A national research study (which included Oregon households) has shown, however, that home refrigerators are often not cold enough to safely store hazardous food such as vegetables and herbs in oil for long periods.

Because harmful bacteria can grow faster at higher refrigerator temperatures, the length of refrigerated storage must be limited for safety. According to conclusions drawn in an analysis of handling procedures (Nummer et al., 2011), vegetables and herbs in oil mixtures should not be refrigerated longer than 4 days before using, discarding, or freezing.

Label containers with the date that the oil mixture was prepared as well as the date (four days later) by which the mixture must be used or else frozen for longer storage.

Storage Recommendations

Raw or cooked garlic and/or raw herbs in oil

These mixtures **MUST** be refrigerated and used within 4 days or frozen for long term storage. (**Note:** Raw garlic **MAY** be safely stored in vinegar at room temperature.)

Dried garlic and/or dried herbs in oil

If oil is seasoned with dried garlic and/or dried herbs, the mixture **MUST** be refrigerated and used within 4 days or frozen for long-term storage.

Dried tomatoes seasoned with garlic and/or herbs

Dried tomatoes-in-oil mixtures with garlic and/or herbs **MUST** be refrigerated and used within 4 days or frozen for long-term storage.

Dried tomatoes in oil

Because of their acidity, unseasoned (i.e., no vegetables or herbs) fully dried tomatoes may be safely stored in oil at room temperature. (Refrigeration may delay rancidity, however.)

Mushrooms or chilies in oil

Mushrooms and chilies in oil must be refrigerated unless they have been pickled with vinegar or lemon juice. Mixtures must be refrigerated and used within 4 days or frozen for long-term storage.

Pesto

Pesto (an uncooked seasoning which includes fresh basil, garlic, pine nuts, and oil) must be refrigerated and used within 4 days or frozen for long-term storage.

Recipes

Basic pesto

¼ cup pine nuts (or sunflower seeds, walnuts, or a combination)
3 cloves garlic
2 cups fresh basil leaves (or 1 cup basil and 1 cup parsley leaves)
¼ cup grated Parmesan cheese
¼ teaspoon salt
½ cup olive oil

Finely chop nuts and garlic in a food processor. (A blender can also be used, but it is more time-consuming. Add basil and chop really fine. Add Parmesan cheese and salt. Mix well. When everything is well blended, add oil and mix all ingredients together. Store pesto in the refrigerator and use within 4 days or freeze for long-term storage.

Hint: Pesto can be frozen in ice cube trays. When frozen, wrap individual cubes in plastic wrap and store in a freezer container.

Fresh Vegetables/Herbs in Oil

Place whole or crushed vegetables and/or herbs in a clean container. Add oil and refrigerate. Use within 4 days or freeze for long-term storage.

Flavored Dried Tomatoes in Oil

The tomatoes can be flavored with fresh or dried herbs and garlic. To soften tomatoes quickly, dip in bottled lemon juice or 5% vinegar before placing in the oil. Store in the refrigerator and use within 4 days or freeze for long-term storage.

Reference: Nummer, B.A., Schaffner, D.W., Fraser, A.M., and Andress, E.L. Current food safety issues of home-prepared vegetables and herbs stored in oil. *Food Protection Trends* 31:336-342, 2011.

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