Presentation

foodborne pathogens

How to avoid foodborne pathogens when home canning food for long-term storage

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Bacteria

Common Foodborne Bacterias to Avoid

Salmonella bacteria

- It is a group of bacteria **naturally found** in the intestines of mammals, chicken, birds, and reptiles.
- Behind only the Norovirus pathogen, Salmonella is the **second leading cause** of food poisoning in the USA.
- Creates a **potentially life-threatening** infectious disease called Salmonellosis, which is an infection that can cause a debilitating condition and possibly a functional gastrointestinal disorder

How to Avoid Salmonella

Contamination of food occurs when there is contact with the feces of an animal host or infected human.

Heat will destroy Salmonella so **proper cooking** is essential to prevention.

Raw chicken should be **cooked** to reach a minimum internal temperature of 165◦F.

Proper food handling practices should be followed to avoid cross-contamination between raw meat, utensils, countertops, and cooked foods.

Hand washing is **essential** for all food handlers, and for persons who have diarrhea or have had contact with someone with diarrhea.

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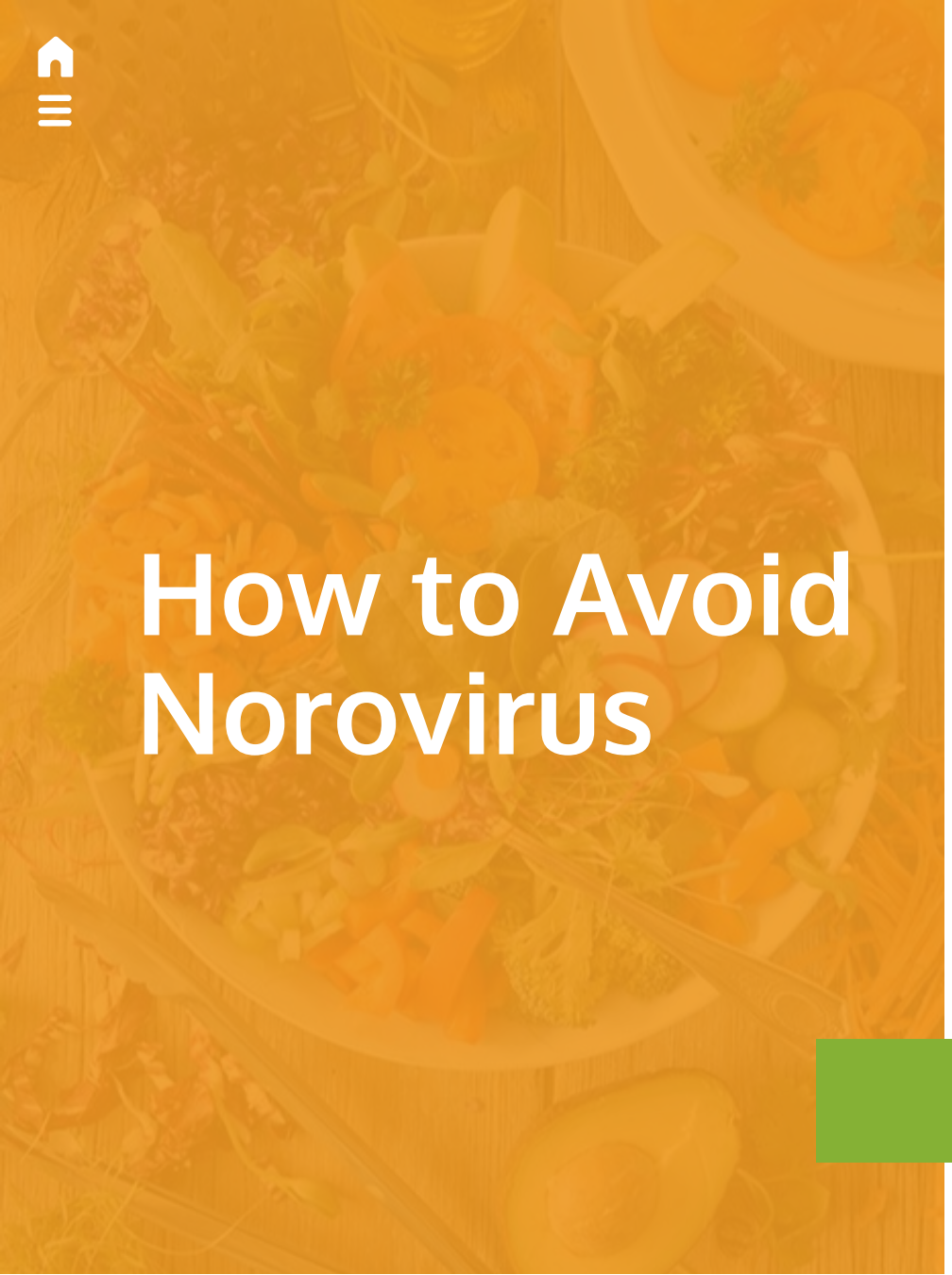
Norovirus (Norwalk virus)

- The **leading cause** of foodborne illness (food poisoning), waterborne illness, and recreational water illness in the USA.
- It is a **highly contagious** related group of viruses which can infect and severely inflame the gastrointestinal tract of humans thereby causing an illness known as acute viral gastroenteritis.
- Transmission usually occurs via consumption of food or water **contaminated** with the pathogen.

Norovirus Gastroenteritis

- Contamination can occur at any point while food is being grown, harvested, stored or prepared and can **survive on unsanitized surfaces for weeks.**
- Primary cause is **foodborne transmission** resulting in nearly 5.5 million illnesses in the US each year; resulting in 15,000 hospitalization and 150 deaths annually.
- This illness is sometimes called the “stomach flu” but it is **not related** to the influenza viruses.
- Infections are responsible for an estimated 21 million **new cases** of gastroenteritis in the US every year.



How to Avoid Norovirus

Adequate hand hygiene is considered the most important means of **preventing the spread** of Norovirus.

It is critical that every food handler always **properly wash their hands** before preparing or serving food to others.

Everyone should **wash their hands** before eating, and after using the bathroom, changing a diaper, caring for someone with diarrhea or cleaning any area where someone has vomited.

Sufficient heat will inactivate Norovirus so adequate cooking and keeping foods properly heated is also important. It is why Norovirus is often associated with cold foods such as salads, sandwiches, raw fruits and vegetables, raw oysters, and other raw shellfish.

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Parasites

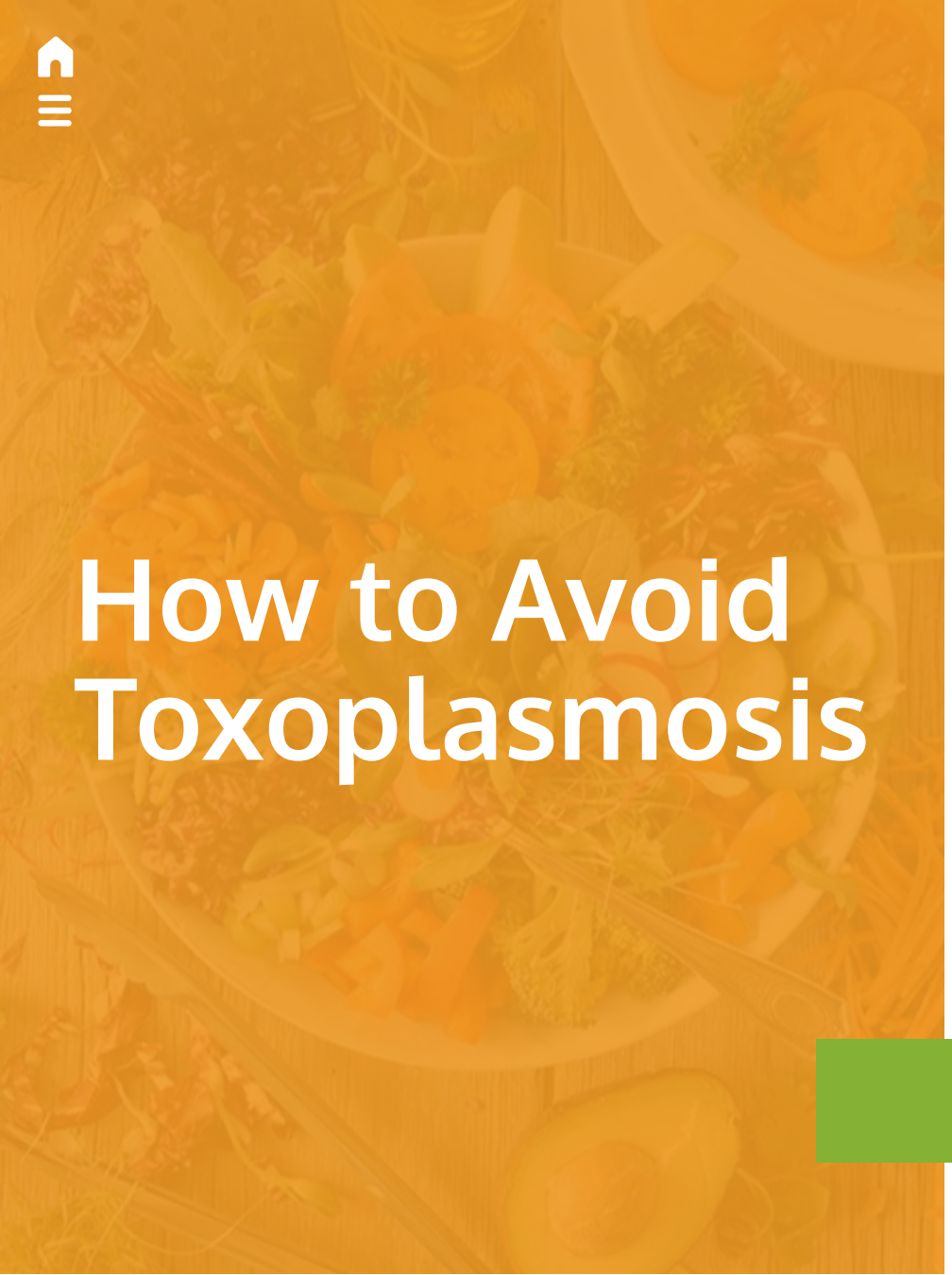
A foodborne parasite identified and How to Avoid

Toxoplasma gondii

Causing nearly 400 fatalities per year, Toxoplasmosis is considered to be the **third leading cause** of death from foodborne illness in the United States.

Toxoplasmosis

- Toxoplasmosis is an **infectious disease** caused by a microscopic parasite called Toxoplasma gondii.
- People often get the infection from eating **undercooked contaminated meat** (especially pork, lamb, and venison) or shellfish. You can also get it from contact with cat feces.
- It is **especially dangerous** for pregnant women and their unborn child.
- Most pregnant women and other healthy adults will not suffer any symptoms and will not even know they have become infected with the **parasite**.



How to Avoid Toxoplasmosis

There are no symptoms if exposed. While the parasite is found throughout the world, more than 40 million people in the United States may be infected with the Toxoplasma parasite, and not even know it.

- **Wear gloves** when gardening and during any contact with soil or sand.
- **Cook food** to an internal temperature high enough to kill harmful pathogens.
- **Freeze meat** for several days at sub-zero (0° F) temperatures before cooking to greatly reduce chance of infection.
- **Rinse** fresh fruits and vegetables under running water.
- **Wash** your utensils, cutting boards, and countertops with hot, soapy water after preparing each food item.
- **Wash hands** with soap and water after cleaning out a cat's litter box.

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Mold & Yeast

How each play a role in food spoilage

What is Mold & Yeast?

Mold and yeast are transferred from place to place by people, equipment or food and air currents.

Yeast are single-cell organisms that cause food to spoil yet do not cause foodborne illness.

Molds are microscopic fungi that can live on plants and animals. Most molds spoil foods and some may cause allergic reactions.

Fungi can occur as yeasts, molds, or as a combination of both forms. Some fungi are capable of causing superficial, cutaneous, subcutaneous, systemic or allergic diseases. Yeasts are microscopic fungi consisting of solitary cells that reproduce by budding. Molds, in contrast, occur in long filaments known as hyphae, which grow by apical extension.

Michael R. McGinnis and Stephen K. Tyring. -Introduction to Mycology

How to Avoid Yeast & Mold

Most yeasts and molds are **heat-sensitive** and destroyed by heat treatments at temperatures of 140-160°F (60-71°C).

Yeast and molds can thrive in high-acid foods like jams, jellies, pickles, fruit, and tomatoes. Actually, they prefer a slightly acidic environment. But these microscopic fungi are **easily destroyed** by heat processing high-acid foods at a temperature of 212 °F (100 °C) in a boiling water canner for the recommended length of time.

When pickling, ensure your vinegar is **a minimum** of 5% acidity. Anything less and yeast and mold can grow.

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Botulism

Understanding Botulism when Home Canning

Clostridium botulinum

Botulism is a rare but very serious muscle paralyzing illness caused by a nerve toxin (poison) produced by bacteria called Clostridium botulinum commonly found in soil and marine sediments.

Foodborne Botulism

- Sickness usually begins within 12-36 hours after contaminated food is consumed.
- The classic symptoms include blurred or double vision, drooping eyelids, dry mouth, impaired speech, muscle weakness and shortness of breath.
- Botulism illness is caused by ingesting the neurotoxins excreted by the bacterium's spores; spores which thrive in an anaerobic (no free oxygen) environment.
- A sealed Mason jar is the perfect environment for a spore to produce toxins if the spore is present to begin with due to food not properly handled, cleaned and prepared prior to being packed into a jar.

In 18 years (1996 to 2014), there were 210 outbreaks of foodborne botulism reported to CDC. Of the 145 outbreaks that were caused by home-prepared foods, 43 outbreaks, were from home-canned vegetables.

The Center for Disease Control – June 6, 2019

Botulism & Home Canning

Canning does not *create* Clostridium botulinum spores. Further, botulism toxin is not a by-product of home canning.

For the toxin to be in canned foods (home or commercially canned), the spore must first be present. If a spore is not present on the food, the spore doesn't spontaneously combust and magically appear in a jar of home canned foods simply because you are home canning.

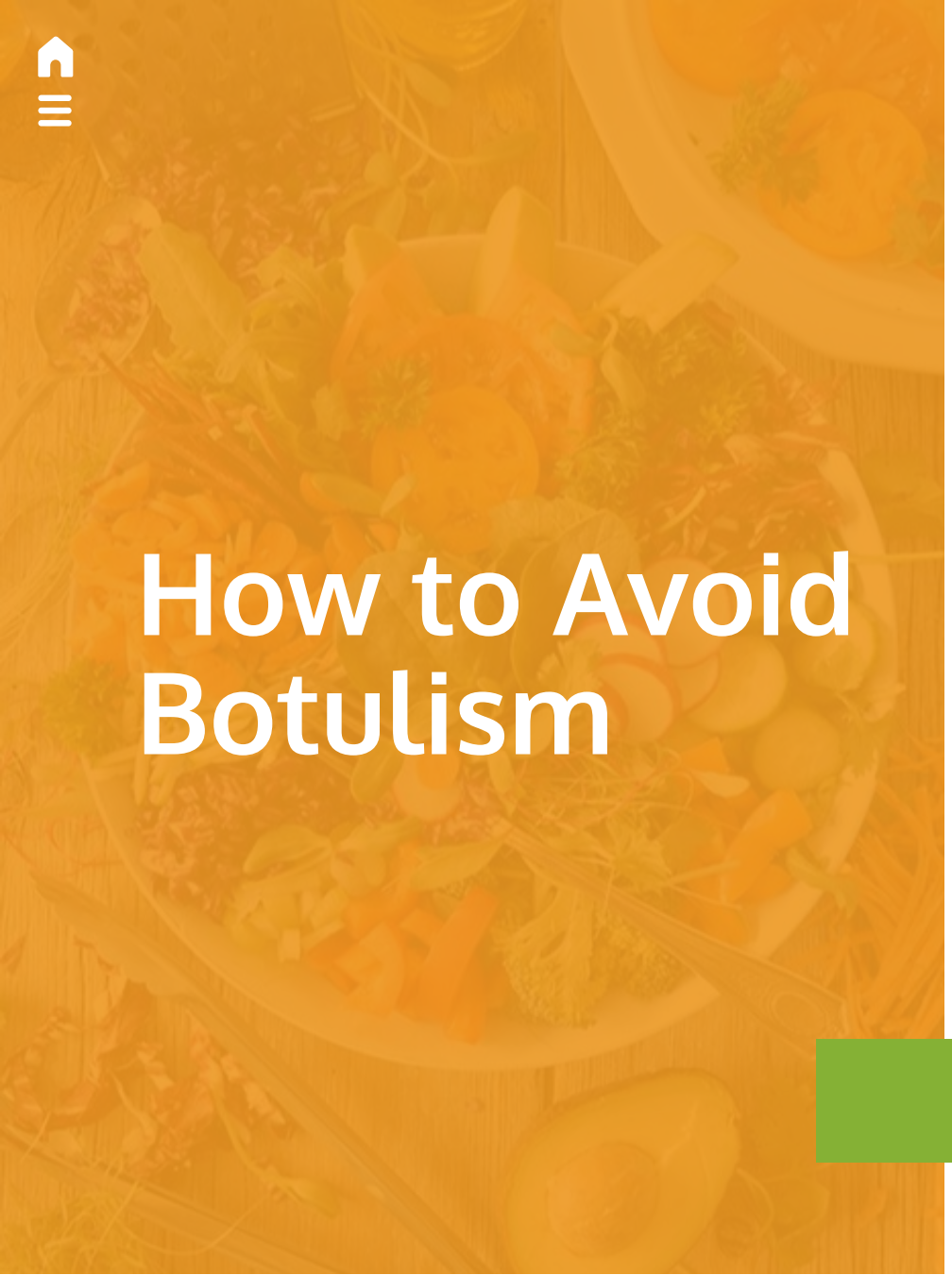
We run a greater risk of growing bacteria, mold, yeast and fungus when we fail to properly process ANY recipe, low- or high-acid!

Misinformation: *Botulism cannot be destroyed by heat alone.*

Truth: *Botulism TOXIN can be destroyed by heat alone. It is the toxin that makes you sick. The Botulism SPORE cannot be destroyed by heat, but can be destroyed by acid.*

Misinformation: *Pressure canning your food is the only way to kill the botulism spores.*

Truth: *Heat doesn't kill the spore. Heat only kills the toxin created by the spore – if the spore is even present to begin with and if the environment is conducive. Many high-acid foods do not require pressure canning because the acid kills the spore therefore preventing the toxin.*



How to Avoid Botulism

If a spore has entered the jar and emitted toxins during storage, you would never know because you cannot see, smell or taste the toxin.

Proper cleaning, handling and preparing of your fruit, vegetables, meats and seafood eliminates the spore (if it was present in the first place).

To ensure your low-acid home canned recipes remain safe to consume, simply empty the jar contents into a pan, and bring it to a boil for the required period of time:

All that is needed to properly kill the botulism toxin is an internal food temperature of 185°F/85°C for 5 minutes.

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How to Avoid Foodborne Pathogens When Home Canning

Hover your mouse over each number to learn how to avoid contaminating food and stay safe when home canning.

1

2

3

4

5

6

7

Spoiled Foods

How to tell if your Home Canned Food has Spoiled

What is NOT spoiled...

Some food's appearance during storage may resemble spoilage, however do not confuse dried or slightly darkened foods with spoilage.

Food not covered by liquid may dry and darken. It is due to the food's exposure to the trapped air within the jar. If the canning lid remains sealed, the food in the jar will not spoil.

Example of Spoilage during Storage


view


view

view


view


view


view

Is my food spoiled?

Learn how to identify if your home canned goods have spoiled in this Quick Canning Tip with The Canning Diva®. There are visual ways to inspect your home canned goods for spoilage but the best advice - When in Doubt, Throw it Out!

Other ways to tell if your home canned food might be spoiled or contaminated with foodborne pathogens:

- the jar is leaking,
- the canning lid is unsealed, bulging, or swollen;
- the food is streaming streaks of discolored liquid;
- the jar contents spurt liquid or foam when opened;
- the food or liquid is drastically discolored or cloudy; or
- the food is moldy, fuzzy, slimy, or smells bad.

When in doubt, throw it out!

Thank you!