Botulism

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For Print January 21, 2011

For many of us, the word botulism makes us think of wrinkle free foreheads and faces that seem frozen from Botox injections. For others, the word means a deadly toxin that can be found in improperly canned food. How can one organism be responsible for both avant garde beauty treatments and severe debilitation, sometimes leading to death?

Botulism, the common name for the disease caused by the toxin produced by the bacteria Clostridium botulinum, paralyzes by means of a potent nerve toxin. In fact, the U.S. Department of Labor OSHA claims that "Botulinum toxin is the single most poisonous known substance." The symptoms of exposure to this toxin occur from four hours to ten days after infection, and include blurred or double vision, difficulty swallowing, poor reflexes, dry mouth, slurred speech and general weakness. The infection can easily be misdiagnosed, as the symptoms mimic those of several other conditions, such as Guillain-Barre syndrome, stroke, intoxication and myasthenia gravis. Clostridium botulinum causes illness in humans primarily through improperly handled food, wounds that become infected with the bacteria, and by growing in the intestines of infants who have ingested the bacteria. Never give infants honey or corn syrup before they reach their first birthdays as these substances may contain the bacteria, which the infants' digestive tracts cannot accommodate.

The Clemson University Extension office writes "*C. botulinum* and its spores are everywhere. It is prevalent in soil and water worldwide. The bacteria and spores themselves are harmless; however, when they grow, they create a highly toxic poison that can lead to extreme illness and even death. The spores must have an oxygen-depleted, low-acid environment in which to grow, and prefer temperatures between 40° F and 120° F.' The abundance of Clostridium botulinum in the environment forces us to be overly concerned with preventing this terrible infection. Knowing what we do about botulism, we understand the importance of preparing food properly to avoid contracting the disease.

The CDC estimates that about 25% of the average 110 cases of botulism each year originate with contaminated food. Home canned food accounts for most of the food borne cases of botulism, but commercially prepared food, usually that which has been mishandled by consumers, can be the cause of the sickness. Interestingly, botulism cases in Alaska, the state with the highest incidence of botulism poisoning, usually occur among Alaska Natives who ingest home fermented foods.

Proper food handling prevents the growth of undesirable organisms in our food. Botulism from home preserved food results when the environment of the food provides opportunity for the bacteria to grow and produce the toxin. The bacteria can be killed by heating to a boiling temperature, but the spores that the bacteria produce will survive regular boiling. Botulism toxin results from the growth of the spores. Heating food to 240˚ for a specific period of time will destroy the spores but since water boils at a lower temperature, a pressure canner must be used to kill the spores, especially in low-acid foods. The Clemson University Extension office publication HCIC 3040 states "Pressure

canning is the only safe method of canning low-acid foods (those with a pH of more than 4.6). These include all vegetables, meats, poultry and seafood. Because of the danger of botulism, these foods must be canned in a pressure canner. Jars of food are placed in 2 to 3 inches of water in a pressure canner and then heated to a temperature of at least 240° F. This temperature can only be reached in a pressure canner." They mean it. Don't take chances with botulism. Use an up-to-date chart from a reputable source for processing times, and be sure to adjust if you are at a high altitude.

Water bath canning destroys unsafe organisms in high-acid foods (those with a ph of less than 4.6). Properly pickled vegetables and fruits may be safely preserved with a water bath canner. Some foods, such as tomatoes and figs, may require the addition of lemon juice or citric acid to bring the ph down to a properly acidic level. Use a recipe from a reputable source, such as the Master Food Preservers, the FDA or the Ball Blue Book. Make sure that any recipe you use is up to date….Granny's old stand-by pickled tomatoes may not be safe any longer, as most tomatoes these days contain less acid than in Granny's time. Always process foods at the proper temperature and for the proper length of time.

Also, remember the basic rules of food handling. Keep hot foods hot and cold foods cold. Clean, clean, clean! Refrigerate leftovers promptly.

If you have any further questions, call the Master Food Preservers and leave a message at (530) 621-5506. A Master Food Preserver will get back to you with an answer. The Master Food Preservers are also available free of charge to speak to organizations and clubs about food safety or food preservation topics. Just call the number above to arrange for a speaker for your group. For more information about the public education classes and activities, including the free public classes on food safety and pressure canning, be sure to go to the Master Food Preserver website at http://ceeldorado.ucdavis.edu/Master_Food_Preservers/.