

Dysbiosis, Candida and the Allergy Connection

By Nutritionist Barbara Bourke

Good bugs versus bad bugs. Is dysbiosis slowly killing you?

An old naturopathic principle that health and disease starts in the digestive tract is more relevant today than it has ever been.

The Digestive system comprises the digestive tract from the Mouth through to the anus. It is the means by which ingested food is broken down in the alimentary canal into a form that can be absorbed and assimilated by the tissues of the body and by way of the colon the by-products of digestion are eliminated.

The organs of the digestive system are the mouth, pharynx, esophagus, stomach and the small and large intestine. The liver, pancreas and gallbladder are vital accessory digestive organs.

The important function of digestion and absorption will be compromised if the digestive system is overgrown with the wrong kind of microorganisms. Parasites and harmful, detrimental microorganism, like viruses, bacteria, yeast/fungi and protozoa (a group of parasitical microorganisms) become harmful when allowed to proliferate.

Overuse of antibiotics, nutrient depleted diets and unhealthy lifestyle practices all lead to an alteration of our healthy gut flora. This overgrowth of unhealthy microorganisms can become life-threatening when immunity is low.

An imbalance in the ratio between beneficial microorganisms and detrimental microorganisms in the body is known as dysbiosis.

We live in a virtual sea of microorganisms. If we could see them with the naked eye it probably would look like a battle field. However, with the advancements of modern technology we are now able to observe the interesting life of this microbial underworld. Microscopes with resolutions as high as 40000x allows us to witness the interchanging life cycles of microbial life forms <http://www.health-science-spirit.com/pleomorphics.htm>

Thanks goodness we have our police force, the immune system, at hand to protect us against these invaders. Gastric acid in the stomach is another safeguard. If potential detrimental microbes enter our body via contaminated food, gastric acid is our shield against microbial colonisation of our stomach. Then again, long-standing dysbiosis in the intestines can lead to a lack of gastric acid and this opens the floodgates to unwanted harmful microorganisms. The associated inflammation will cause pain and along the way can lead to ulcers.

Another, and very serious, problem with microbial overgrowths is the by-products of these creatures. These are toxic and add to the burden, often doing more damage to our health than the actual microbe. They can cause inflammation not only in the intestines and stomach, but inflammation of the liver, pancreas and gallbladder as well. Inflammation in itself has the potential to cause many of our degenerative diseases.

Let me give you an example. In the case of the *Escherichia coli* (*E. coli*), a species of detrimental bacteria that normally resides in the human Intestinal Tract and becomes toxic when it over-proliferates or invades other areas of the body. It is indicated in many intestinal infections, urinary tract infections and may also be an underlying cause of Crohn's disease and Prostatitis. Some of the *Proteus* species is another detrimental bacteria and can be a cause for Prostatitis as well.

The *Helicobacter Pylori* is known to be able to cause many digestive problems including ulcers. However, less known may be its ability to increase the risk of Arteriosclerosis, Stroke, Ischemic Heart Disease and increased risk of Glaucoma even Larynx and stomach cancer as well as Hashimoto's Thyroiditis. *Helicobacter pylori* is suspected of causing Alzheimer's, Migraines and Rosacea (eradication of *Helicobacter pylori* often results in a significant reduction in Rosacea symptoms) (1).

There are various species and different strains of detrimental bacteria, parasites and fungi, which are responsible for countless health problems.

If the flora of the digestive tract is healthy and if the immune system is strong they can lay dormant for a long time and may not cause any serious problems. However, many unhealthy aspect of our modern life, leads to the assumption that in the end the bad bugs may over-power the good bugs. When this happens the associated inflammation will damage the mucus membranes of the intestinal wall. This leads to what is called the "Leaky Gut Syndrome" characterized by the inability of the Intestines to prevent the "leakage" of large particles (Antigens) through the intestinal wall into the general blood circulation. Giving any opportunistic detrimental microorganism the break they need to invade the whole body and with it inviting all kind of disease to flourish.

Whichever way you look at it; over-population and infection with any pathogenic microorganism spells trouble.

Is *Candida* your worst Health destroying Enemy?

There is one such microorganism which has potential disease implication far worse than many people might know. Its name is *Candida*. *Candida* is a genus of yeast-like detrimental fungi.

Manifestations of oral and vaginal thrush were described by Hippocrates over 2000 years ago. With the advent of the germ theory many centuries later, the yeast *Candida albicans* was identified as the cause of many symptoms (3.)

Candida albicans is a naturally occurring microorganism within our body since birth. Most babies are born with *Candida*, but from the time of birth the immune system keeps *Candida* proliferation in check. In a healthy environment it coexists, quite happily, with other bacteria. It is beneficial for the immune system and plays a role in absorbing and removing any improper digested and putrefied food matter in our digestive system.

Collectively *Candida* species are opportunistic fungal pathogens and are responsible for superficial and systemic infections in humans. Among these species, *Candida albicans* is responsible for the majority of infections accounting for half of all cases. (5)

However, in 2007 a study by [Li L](#), [Redding S](#) and [Dongari-Bagtzoglou A](#), (4) found that another species of Candida, namely Candida glabrata is emerging as an opportunistic pathogen. Formally non pathogenic, however, Candida glabrata is now surfacing as a major player. Denture-wearing, immunosuppression, antibiotic therapy, and aging are risk factors for oral colonization and infection of Candida glabrata. It is believed to be responsible for approximately 15% of Urinary Tract Infections and may cause Vaginitis. (4)

The list of opportunistic fungi causing serious, life-threatening infection increases every year and many are becoming resistant to triazoles and/or amphotericin B. (family of antifungal drugs).

Since the early 1980s, fungi have emerged as major causes of human disease, especially among the immunocompromised and those hospitalized with serious underlying disease.

A recent study of the epidemiology of sepsis (a whole-body [inflammatory](#) state called a [systemic inflammatory response syndrome](#) or SIRS) found that the annual number of cases of sepsis caused by fungal organisms in the United States increased by 207% between 1979 and 2000. (5)

We can understand that a sick and immunosuppressed patient in a hospital environment has a higher risk of contracting Candida as the immune system is too weak to fight the invader. However, even for those “healthy” people Candida can be a threat. We have to look at the history of antibiotic and immunisation to explain the increase in Candida, as well as medication and the contraceptive pill.

A study back in 1944 by Christie and Garrod already found evidence of the antibiotic and candida connection (10). They (and many other studies after) reported that numerous microorganisms have been incriminated as opportunists, including Candida albicans. In a recent study mice were given levofloxacin, moxifloxacin, prulifloxacin (belonging to the quinolones a family of [synthetic broad-spectrum antibiotics](#)) or normal saline. After 10 days stool samples were tested, it showed all fluoroquinolones tested induced substantial increases in the mice intestinal concentration of Candida albicans.(11).

A number of theories have been proposed as to why there was an increase after antibiotic treatment.

Antibiotic treatment upsets the natural equilibrium of the healthy flora. This will overwhelm the host resistance and permitting the more resistant species, namely the opportunistic microorganism, to take hold as their population vastly increase. Antibiotics also directly stimulate fungal growth. We often see diarrhea with antibiotic treatment, because there is not enough beneficial bacteria left in the gut for proper food digestion.

How does Candida presents itself?

Superficial Candidiasis involves areas of the Skin and Mucous Membranes, including the toes, fingers, nail bed, groin, mouth and vagina. It is diagnosed via clinical examination (1).

Mucocutaneous Candidiasis is a serious condition and may be associated with a genetic malfunction of the body's T-Lymphocytes in which T-

Lymphocytes do not respond to Candida albicans infection (1).

Systemic Candidiasis is a serious condition that occurs in persons with suppressed Immune Systems (for example, AIDS patients or persons who have undergone Chemotherapy). This form of Candidiasis can affect any body system or organ including the Lungs, Liver, Kidneys and Brain (1).

Candida Overgrowth (also known as Candida Overgrowth Syndrome or Candida Intestinal Overgrowth) involves bloating, itching and rashes. It involves the excessive proliferation of Candida albicans in the gastrointestinal system (1).

Foods to live by

Candida proliferates by fermenting simple sugars such as sucrose in order to produce energy.

Acetaldehyde is a waste by-product of fungal sugar-alcohol fermentation by Candida. Acetaldehyde produces many toxic effects in the body. Acetaldehyde readily combines with the proteins that comprise the cell membrane of red blood cells. This causes the "stiffening" of the cell membranes of red blood cells. This process inhibits the ability of red blood cells to enter Capillaries, subsequently reducing the ability of Capillaries to supply Oxygen to various organs of the body. In addition, Acetaldehyde combines with hemoglobin in red blood cells which further inhibits their ability to accept, hold and transport oxygen via the bloodstream. Furthermore acetaldehyde is toxic to the nervous system which can lead to depression, anxiety, and impaired memory. It also interferes with cellular energy production and is a liver toxin (1).

Besides acetaldehyde Candida produces several other toxins Gliotoxin is a [sulfur-containing mycotoxin](#) produced by several species of [fungi](#) it also possesses [immunosuppressive](#) properties (6). Arabitol or Arabinitol is a sugar alcohol and is used as a marker in testing for Candida. Excess is an indication for Candida overgrowth (9). Zymosan is a [glucan](#) with repeating [glucose](#) units. Zymosan is believed to be another by-product of fungi like Candida. It possesses immune suppressant and inflammatory properties (7).

With the above few examples we can see that sugar plays a significant part in Candida.

What kind of symptoms and conditions can we expect to be caused by Candida? Well, how long is a piece of string? The list is so long it probably would fill a few pages. As stated before, just about any organ and body system can be affected. From outside manifestation like oral or vaginal thrush, skin problems like exzema and psoriasis to hormone imbalance, fatigue, depression, memory retention and "brain fog" just to mention a few. Autoimmune diseases have also long been linked to Candida and other microbial overgrowth (8). We now have the visible proof that pleomorphic microbes are the underlying cause of many disease including cancer and autoimmune diseases <http://www.health-science-spirit.com/pleomorphics.htm>

Do you think you might have Candida? There is a questionnaire you might like to check out <http://www.health-science-spirit.com/candidatest.html> (you need to print it out). Have you done the "Spit test"? You find it in Walter Last's "Ultimate Cleanse" article <http://www.health-science-spirit.com/ultimatecleanse.html> or see <http://www.strideintohealth.com/spittest.html>

Which comes first the egg or the chicken?

Allergies or Candida? What is the connection between Candida and allergies? I read in an article by Dr Hoffman (Medical Director of the Hoffman Center in New York City) in which he states:

It is worth noting that over 90% of a healthy population is "allergic" to Candida. How can that be if it normally resides in the body? The delayed hypersensitivity (Type 4 allergy) response by the immune system is what helps the body control yeast overgrowth. This is a normal and protective response to yeast but sometimes it gets out of hand. I believe this is due to an over-proliferation of Candida. Candida can also cause an immediate hypersensitivity response (Type 1 allergy), which is found in approximately 10 percent of the population, and is capable of causing hives, asthma, eczema, chronic vaginitis, abdominal cramps, and diarrhea.

New evidence shows that Candida contains a protein (HWP-1). This protein structure is similar to gluten. This connection can trigger celiac disease in some genetically-susceptible people. Therefore celiac disease could be an allergic reaction to gluten and Candida (2)

First of all let's define the word "Allergy". There is a lot of confusion about the difference between these terms - allergy, intolerances and sensitivity.

An Allergy Reaction involves the immune system. In the true meaning of the words - Allergy, Atopy and Anaphylaxis - all three terms apply to type 1 (immediate, IgE) hypersensitivity.

Food Intolerance and food sensitivities Food Intolerance is an adverse reaction to Food that does not involve the Immune System, not usually anyway. It has been speculated that food intolerances involve a missing enzyme.

The biochemistry of any of those reactions is very complicated, but it always involves the excessive release of inflammatory mediators into the blood stream like histamine, leukotrienes and bradykinins.

Here we have the word inflammation once again. Dysbiosis, Candida and now allergies all seem to have one thing in common; they generate and activate inflammation pathways. Inflammation involves various biochemical reactions that are the body's response to injury, irritation or infection.

Inflammation can either be helpful or harmful.

Acute Inflammation: Is a first and essential response of injury to tissues. Histamine, Serotonin, Bradykinin, Prostaglandins and Leukotrienes are generated. This is very important for the healing process (1).

Immune Response: Here cells of the Immune System are activated in response to Antigens liberated during either the Acute or Chronic stages of Inflammation. engulfing and digesting potential harmful invaders. Phagocytes are a collective term for Cells of the Immune System that can engulf and digest Bacteria, Protozoa, Cells and Cell debris (1).

Chronic Inflammation: Involves the release of Interleukins 1,2 and 3; Granulocyte-Macrophage Colony Stimulating Factor (GM-CSF); Tumor Necrosis Factor Alpha; Interferons and Platelet-Derived Growth Factor (1).

An inflammation response is a beneficial reaction, but can be detrimental if it leads to chronic inflammation if the underlying cause of the inflammation is not rectified. Chronic inflammation can generate a host of diseases.

The part we play in health and disease

So the conclusion is rather simple. Dysbiosis, candida and other microorganisms cause an unbalance of our internal microflora of the gastro intestinal tract, inviting inflammation and erosion of our mucus membranes. Without an intact and healthy mucus membrane the secretion of needed mucus (for protection), hormones and digestive enzymes are impeded. Digestion and absorption as well as protection against infectious and non-infectious diseases are all compromised.

Leaky membranes are also the origin of allergic reactions as larger particles, which are not meant to, enter the blood stream.

Remember what was said in the beginning of this article. Health and disease starts in the digestive tract

Unhealthy Lifestyle and diet, stress, antibiotic overuse, root canals and mercury fillings in teeth all add up in over-burdening the immune system and compromise our health. When it comes to maintaining good health the immune system is our most precious asset. It protects our body against many of the world's most widespread and deadliest diseases.

Over the last decades the changes in food technology has been huge. The advent of genetic engineering, the addition of an ever increasing number of chemical additives, irradiation, processing, and soil depletion, have modified foods so much that they have lost a lot of their original therapeutic benefits. We are often overfed and undernourished.

Addressing your lifestyle, diet and the problem of the proliferation of detrimental microorganisms is like taking the devil by the horns and sending him off to the dungeon where he belongs. It is within your power to lead a life free of dysbiosis, Candida and allergies.

See Walter Last's website www.health-science-spirit.com for great and well researched information and start any health and wellness program with the "Ultimate Cleanse"

References:

1. In-Tele-Health © 2008 (from Hyperhealth Pro CD-ROM)
2. Dr Hoffman <http://www.drhoffman.com/page.cfm/14>
3. http://www.drfit.com/Articles/Archive/Role_of_Candia_Albigans.pdf
4. <http://www.ncbi.nlm.nih.gov/pubmed/17314251>
5. <http://www.nejm.org/doi/full/10.1056/NEJMoa022139>
6. <http://en.wikipedia.org/wiki/Gliotoxin>
7. <http://en.wikipedia.org/wiki/Zymosan>
8. <http://www.ncbi.nlm.nih.gov/pubmed/10332630>
9. <http://en.wikipedia.org/wiki/Arabitol>
10. http://www.archive.org/stream/microbialantagon1947waks/microbialantagon1947waks_djvu.txt
11. <http://www.ncbi.nlm.nih.gov/pubmed/21108571>