Candida albicans is normally an inoffensive yeast-organism which lives in small populations within the intestine. However, under certain conditions, it is capable of mutating into its aggressive fungal form which invades the body systems, causing a great deal of damage.

One of the essentials to bear in mind when treating Candida overgrowth is that you are treating an environmental imbalance and not simply a fungal infection. The mouldy bathroom provides a good metaphor for this concept. In a dark dank mouldy bathroom, you can use all the anti-fungal sprays you like and the mould will die – for a time, but it always comes back! However, if you change the environment by allowing fresh air and sunshine to perfuse the room, the mould finds itself in an environment which is no longer conducive to growth. Thus it is absolutely pointless simply treating Candida with anti-fungal agents, because if the environment remains conducive to Candida thriving, the population will continue to explode. More so, those yeast organisms which survive will become resistant to the anti-fungal medications.

It is absolutely imperative to establish why the Candida was given the opportunity to overgrow in the first place, and if at all possible, treat that imbalance as well as killing the yeast. Common environmental imbalances which allow Candida to overgrow include:

- High blood sugar levels such as in cases of diabetes or a high sugar diet;
- Changes in hormone levels as a result of the Pill, HRT, pregnancy, pre-menstuation, puberty, menopause, and environmental hormones as found in non-organic dairy products;
- Changes in normal gut flora or gut dysbiosis often as a result of systemic antibiotics, or intestinal infections;
- A compromised immune system, possibly as a result of long term illness such as AIDS, Chronic Fatigue Syndrome, immunosuppressive therapy or even long term stress.

**What Happens When Candida Overgrows?**

The Candida population found in a healthy intestinal tract is small: it is held in check by the intestinal flora and fauna, as well as a healthy immune system. If this natural control system is disrupted, or some other homeostatic imbalance occurs within the body, Candida is provided with an opportunity for a population explosion. The environment has become conducive towards allowing a Candida overgrowth: anyone who has made bread or wine will have an idea how quickly yeast can grow!

**The Gut**

Within the gut, the yeast cells start to change from their benign yeast-form into the more invasive fungal-form. The fungal-form begins to extend its living space by secreting toxins, which inflame and damage the gastric mucosa. This has a twofold effect. First, the digestive enzyme secretion is impaired resulting in the partial digestion of food and, secondly, the gastric mucosa is easier to penetrate.

The fungal-form of Candida develops aggressive root-like structures called rhizoids which are able to penetrate the wall of the gut and access the body systems via the blood stream. As the rhizoids pierce the gut wall, they create a porous leaky gut allowing the partially digested food particles to enter the blood stream and set up food sensitivities. The fungus also ferments the sugars in our colon, and produces large volumes of gas leading to the common symptoms of excess gas, bloating and abdominal discomfort.

**The Immune System**

The porous leaky gut allows undigested food particles, enteric toxins and foreign pathogenic organisms to enter the blood stream as immune-challenging antigens. The antibodies of the white blood cells combine with the antigens to create ‘antigen-antibody-immune-complexes’ which may be deposited at various sites in the body. These immune complexes may be deposited in the lungs leading to symptoms such as asthma, in the joints and muscles resulting in inflamed tender joints or muscles, or even the brain leading to what is referred to as ‘brain allergies’.

The large undigested food particles which enter the blood stream via the leaky gut activate the white blood cells to release antibodies against these molecules, thereby setting up food sensitivities and the plethora of symptoms associated with food intolerance.
Some of the antigens may so closely resemble the body’s own cellular tissues that the immune system can become confused and begin to attack ‘self tissue’ leading to auto-immune disease. 

Candida attacks the immune system in a double whammy by not only imposing heavily on the humoral arm of the immune system, but also by releasing up to 100 thus far isolated toxins, some of which specifically act to suppress the cellular arm of the immune system.

The Nervous System

Although it is commonly known that Candida sufferers can experience mood swings, depression, brain fogginess, poor concentration, even autism, the mechanism by which Candida affects the nervous system is still unclear. Several theories exist; one such theory centres on the possibility of the leaked proteins from the gut being termed as exorphin. Like endorphins, they can affect the neurological reactions, but are derived from outside the body. Exorphins may be able to slot into receptors within the brain, thereby influencing the mood of the sufferer by switching the neurological reactions on and off. Another theory, again related to the leaked protein molecules of the leaky gut, suggests that these undigested protein antigens form complexes with the antibodies and are deposited in the brain as ‘brain allergies’.

The Hormonal System

Candida has within its structure a steroid-binding protein, which allows it to bind with progesterone and other hormones in the endocrine system. Once Candida has bound to the hormone, it is capable of participating or interfering with the hormonal signals. Hormonal conditions associated with Candida include severe premenstrual syndrome, possibly endometriosis, thyroid conditions and a condition first described by the endocrinologist Phyllis Saider as ‘APICH Syndrome’ (Auto-immune Polyendocrinopathy Immune-dysregulation Candidosis Hypersensitivity).

Some Symptoms associated with Candida overgrowth:
- Abdominal bloating and gas;
- Leaky gut and food intolerances;
- Thrush of the mouth, vagina, penis or anus;
- Sugar cravings;
- Athletes foot or fungal nail infections;
- Dandruff;
- Sinusitis or nasal catarrh;
- Pain behind the breastbone;
- Brain foginess and poor concentration;
- Frontal headaches;
- Intolerance of perfumes and other smells;
- Pain in the muscles or joints;
- Symptoms worse in damp weather.

Protocol for Treatment:

1. Anti-Candida Diet

Diet is one of the most fundamental aspects of treating Candida. Candida being a yeast feeds voraciously on sugars, so the diet must completely avoid ALL sugary foods. Refined carbohydrates break down into sugars, of course, so these should be avoided for the first few months of treatment. There is an argument regarding fruit and fructose. Some opinions are that Candida relies on an oxygen deprived environment, and that as fructose produces oxygen, it is possibly a safe sugar to use. Fructooligosaccharide (FOS) is a fruit sugar and is often used as a prebiotic in the treatment of Candida. However, several of my patients who have chosen to eat fruits too early in the programme have had a recurrence of their symptoms, so to err on the side of caution, I would suggest focusing the diet on protein, vegetables and salads, with a few unrefined carbohydrates such as rye bread, oats porridge or brown rice.

It is far beyond the scope of this article to outline a Candida Diet, but there are some very good books on the market, and I always recommend to my patients that they invest in one of these for menu inspiration (See Further Reading).

Some people believe that one can treat Candida with diet alone; however, it has been shown that if Candida is deprived of sugars, it will begin to feed on proteins, so it is important to follow the entire programme as outline below.

2. Anti-fungal Medications

There are many very effective natural anti-fungal agents available, and I always rotate them to deprive the yeast of the opportunity to develop resistance. Candida has the ability to adhere rather tenaciously to the gut lining, so it can help to discourage this adhesion by using cranberry extract, which has been found to be as effective in the gut as it is with the bacteria of the bladder wall.

Garlic, of course, is an absolutely superb anti-fungal herb and best taken in its raw state on an empty or nearly empty stomach, as a suppository! Some other herbs which exhibit excellent anti-fungal actions include Teubuisie impeteginosus, Commiphora molmol, Oregano vulgare, Thymus vulgaris and Aloe vera barbadensis or ferox – amongst others. Aloe has the double action of acting as an anti-fungal agent, as well as a potent healer of the leaky gut wall. Other anti-fungal agents include Caprylic acid and Grapefruit seed extract. I have to say that I never suggest grapefruit seed extract, as I find it very corrosive on the gastric mucosa; however, it is excellent as a topical agent for athletes foot or fungal nail infections, as well as for cleaning the fridge etc of fungal spores.

3. Heal Leaky Gut

It is essential that the leaky gut is addressed and healed to avoid further food sensitivities developing and to give the immune system a chance to recover. Butyric Acid, L-Glutamine, N-Acetyl Glucosamine, and MSM are easily available supplements which provide the necessary nutrients to rebuild the gut wall. As mentioned above, Aloe vera or ferox is a superb healer of the alimentary canal as well as acting as an anti-fungal agent. Herbs such as Calendula officinalis, Matraccaria recurvita and Berberis aquifolium stimulate the growth and repair of the gut wall; I find that these are best taken as an infusion on an empty stomach, so that the watery extracts can gently wash over the inflamed enteric tract – healing and soothing.

4. Repopulate the Gut

Lactobacillus acidophilus and Bifidobacteria are major players in the body’s tactics to keep Candida under control, and their populations are commonly depleted in Candida overgrowth, thus supplementation is essential. Make sure that the probiotic supplement of your choice is of a human strain, guaranteed live, acid stable and capable of attaching to the gut lining. Initially, it may be useful to...
use high doses such as 30 billion bacteria per day, then reducing to four billion per day as a maintenance dose for at least three months.

The friendly bacteria feed on a substrate known as a 'prebiotic', and an excellent prebiotic is FOS (Fuctooligosaccharide). If FOS is not included in the probiotic capsule, it is available in a granulated form, and has the advantage of providing some welcome sweetness to the diet. The downside of FOS is that it can produce gas; if this occurs, simply reduce the intake. Other prebiotic agents such as psyllium seeds, pectin, aloe vera juice or slippery elm are very good alternatives.

5. Support the Digestive Process
Apart from the food sensitivities which may occur as a result of the leaky gut, the inflamed and damaged intestinal mucosa can have difficulty secreting the digestive enzymes necessary for the complete breakdown of food. Poorly digested food means that nutrients are difficult to absorb, so patients may also find themselves in a state of malnutrition.

The undigested food particles can form a substrate on which the yeast may feed and ferment, thereby producing gas and symptoms of heaviness and bloating.

At the beginning of the treatment programme, it can help tremendously to take the full spectrum of digestive enzymes with each meal. After several weeks, when there is some repair to the gut wall, it is appropriate to introduce some bitter herbs such as Berberis vulgaris, Gentiana lutea or Artemesia absinthium, which actually stimulate the body to produce and release its own digestive enzymes. Berberis aquifolium has the double action of stimulating digestive enzyme release as well as the healing of the mucosa.

6. General Detox
As discussed earlier, Candida produces up to 100 difference toxins, which are released into the blood stream and poison the body. Not only does the liver have to contend with these toxins, but it also needs to deal with the toxins leaked into the system via the porous leaky gut. Apart from the everyday toxins which the liver needs to eliminate from the body, the additional load places this organ under enormous strain, and it would be prudent to include a liver detox within the Candida treatment programme. The bitter herbs mentioned above are all herbs which act to increase the flow of bile, thus flushing the liver and depositing the toxins in the stools for elimination.

Foods which facilitate a liver cleanse include ginger, lemon, peppermint, olive oil, artichokes, garlic and raw chicory – I am certain that you can devise some spectacularly delicious liver cleansing meals and teas from that list!

Epsom salt baths, hot saunas, massage, ‘AquDetox’ and detoxifying herbal blends can all contribute towards relieving the body of its toxic load.

7. Tone Immune System
An essential part of the helping the immune system to recover is to accurately identify the foods to which the sufferer has become intolerant, and to avoid these foods for at least six months. In the meantime, focus should be given towards food rotation and healing the leaky gut to prevent further intolerances from developing.

The second important area to focus on is to kill the fungus, thereby relieving its impact on the immune system. Once these two actions are in place, it would be prudent to give the system immune tonic herbs such as Olive leaf (Olea europaea), Astragalus membranaceus, PauD’Arco (Tabebuia impetiginosa), Echinacea angustifolia, or Garlic (Allium sativum). Garlic, Pau D’Arco and Olive leaf are ideal immune tonics, as they also have anti-fungal properties.

8. Rebalance the Hormones
It is common that Candida starts to become a problem either during puberty, pre-menstrually, during pregnancy, when a woman starts to take HRT or the Pill. The common denominator here is an increased surge of female hormones. It is unclear exactly why this occurs, but it may have something to do with a change of pH within the body as a result of the influence of one hormone or another. Whilst there are herbs which can be used to rebalance the hormones, this really cannot be effectively achieved whilst flooding the body with the hormones of HRT or the Pill and is not an option during pregnancy.

However, one of the major functions of the liver is the breakdown and elimination of excess hormones. In the case of Candida being a result of an hormonal imbalance, herbs and foods which encourage the liver to flush out and eliminate excess hormones and toxins can go some way towards rebalancing the hormone levels.

Candida is a complex disorder with a wide range of symptoms and causes; it is therefore a complex disorder to treat. The complexity of the symptomatic picture means that Candida can easily imitate other unrelated disorders and the correct diagnosis is, of course, essential. There are several investigative tests available which can be employed to identify whether someone is suffering from a systemic Candida overgrowth and to which foods they may have developed sensitivities. People suffering from Candida are strongly advised to seek professional help; they may wish to use the Candida website to find a suitable practitioner in their home area.

You can find the National Candida Society website on www.candida-society.org.uk or the National Institute of Medical Herbalists on www.nimh.org.uk

About the Author
Jo Dunbar MSC Dip Herbal Medicine MNIMH qualified and started practising as a member of The National Institute of Medical Herbalists in 1999, whilst at the same time going on to study an MSc degree in Complementary Therapy Studies at Westminster University, where she focused her research on Chronic Fatigue Syndrome. Jo has written the guide - How to Cope Successfully with Candida. (Wellhouse Publishing, 2003.) - and is registered as a practitioner on the National Candida Society website. Jo's guide is available at her herbal apothecary and clinic Botanica Medica, certain health food stores or Lloyds Chemists. Jo uses highly accurate laboratory tests to diagnose Candida and gut bacteria levels, and then prescribes individualized herbal medicine formulas, as well as advice about diet and nutritional supplements to complement the treatment program. Jo may be contacted on Tel: 01372 470990; info@botanicamedica.co.uk www.botanicamedica.co.uk

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Further Information
National Candida Society: www.candida-society.org.uk
National Institute of Medical Herbalists: www.nimh.org.uk

Further Reading
White E. Beat Candida Cookbook. Thorsons, 1999