



Welcome to the tenth issue of Mycology News, a newsletter for health care professionals dedicated to the dissemination of information on the clinical use of mushroom-nutrition.

In this edition, we present a study by Dr Rajendra Sharma of the Diagnostic Clinic on the use of *Coriolus* supplementation in Leaky Gut Syndrome and have an update on Dr Jean Monro's work with chronic fatigue syndrome (CFIDS), as well as her protocol for HPV. This is followed by a personal account from a prostate cancer sufferer of his experiences with mushroom nutrition, a report from Dr Girao Bastos on a case of *Coriolus* supplementation in a dog with tumours on the prostate, initial thoughts from John Tindall on the use of mushroom nutrition in the treatment of gout, and an enzymatic assay of the mushroom *Agaricus blazei* by Prof. Amin Karmali.



Coriolus versicolor Supplementation in Leaky Gut Syndrome By Dr. Rajendra Sharma



Dr. Rajendra Sharma (MB, BCH, BAO, LRCP+S (I), MFHom) Age 44, qualified as a doctor in 1984. After a short time in the NHS, he joined his late father in general practice using integrated complementary and orthodox medicine. Dr. Sharma has studied in Europe, India and the USA and was until recently Medical Director of the Hale Clinic. His published work includes The Family Encyclopedia of Health and co-authorship of Your Child – Asthma. In 2002 Dr. Sharma co-founded the Diagnostic Clinic and is its Medical Director. The Diagnostic Clinic, 50 New Cavendish Street, London W1G 8TL Tel: 44-207-009-4650 rajendra.sharma@thediagnosticclinic.com

Background

Leaky gut syndrome (LGS) is the name given to a very common health disorder in which the basic organic defect is an intestinal lining which is more permeable than normal. The abnormally large spaces between the cells of the gut wall allow the entry of toxic material into the bloodstream that would, in healthier circumstances, be repelled and eliminated. The gut becomes leaky in the sense that bacteria, fungi, parasites and their toxins, undigested protein, fat and waste normally not absorbed into the bloodstream, pass through a damaged, hyperpermeable, or "leaky" gut. This can be verified by special gut permeability urine tests, microscopic examination of the lining of the intestinal wall as well as phase contrast or darkfield microscopy of living whole blood.⁽¹⁾

Leaky gut syndrome is frequently associated with autoimmune disease and reversing autoimmune disease often depends on healing the lining of the gastrointestinal tract. Indeed, until this is done, any other treatment just takes the form of symptom suppression. Diseases in this category include lupus, alopecia areata, rheumatoid arthritis, polymyalgia rheumatica, multiple sclerosis, fibromyalgia, chronic fatigue syndrome, Sjogren's syndrome, vitiligo, thyroiditis, vasculitis, Crohn's disease, ulcerative colitis, urticaria (hives), diabetes and Raynaud's disease. Understanding the leaky gut phenomenon not only helps us to understand why allergies and autoimmune diseases develop but also helps us formulate safe and

effective therapies to bring the body back into balance.⁽²⁾

Rational for *Coriolus versicolor* Supplementation

In the last few years, immunonutrition in the form of mushroom nutrition has been established in the West through the work of practitioners such as Dr Julian Kenyon and Dr Jean Monro^(3,4), as well as through increasing amounts of research in areas such as the importance of both enzyme activity and superoxide dismutase activity (SOD) in mushroom nutrition^(5,6). No other group of natural substances exhibit such a profound effect on the health and balance of the immune system and thus the body's ability to maintain homeostasis in the face of multiple challenges.

This immuno-modulatory action is perhaps best understood in terms of the impact of mushroom nutrition on the balance between the cellular and humoral immune responses. As these 2 arms of the immune system are mutually inhibitory, through the actions of cytokines produced by the so-called TH1 and TH2 cells, a strong TH2 (pro-inflammatory) immune response, such as that induced under conditions of stress or chemical exposure, will suppress the production of TH1 cytokines, which play a vital role in strengthening the cellular immune response and thus the body's ability to defend itself against multiple pathogens, including bacteria, viruses, fungi and carcinogenic agents.

Leaky Gut Syndrome (LGS) is characterized by a TH2 immune state and has many of the same causal factors, such as stress and chemical exposure, which are responsible for precipitating a chronic TH2 immune state. Based on this it was suggested that LGS patients may benefit from the rebalancing of the immune system brought about by mushroom nutrition. This was supported by anecdotal evidence suggesting that *Coriolus versicolor* supplementation could be useful in reducing the symptoms associated with LGS and Mycology Research Laboratories Ltd. asked the Diagnostic Clinic to conduct a pilot study in order to explore the possibilities for mushroom nutrition supplementation in LGS patients.

Study Design:

The Diagnostic Clinic randomly selected thirteen (13) patients diagnosed with Leaky Gut Syndrome and used *Coriolus versicolor* supplementation at levels of 4.5 grams (3 tablets, 3 times) per day in 12 patients and 3 grams (3 tablets twice) per day in a child of 10 years of age.

Supplementation period:

12 weeks

Diagnostic Testing Prior to Supplementation:

All patients undergoing the trial had an initial Polyethylene glycol (PEG) urine analysis. This test using an inert, non-absorbable range of PEG molecules from size 250 to 600 molecular weight is a simple and established test to determine the degree of gut permeability. The patient drinks a solution containing these various sized molecules. The lower sized ones will be absorbed to a degree and pass into the urine while the larger molecules should not pass into the gut unless there is increased intestinal permeability.

The results were supplemented with other tests on a case by case basis.

Diagnostic Testing after Supplementation:

A further PEG test was conducted after supplementation.

Outcome in Thirteen (13) Patients:

1) Two (2) patients were lost in follow-up

2) Nine (9) patients showed improvement of symptoms and in five (5) this was confirmed by repeat PEG testing (the other 4 declined to have further PEG tests). Of these five, one with hyperthyroidism showed full repair of Leaky Gut and improved symptoms, while the other four showed partial repair. Of these:

- i) One (1) had an autoimmune-like condition but without orthodox blood changes. Symptoms improved.
- ii) Two (2) had bowel infections from (Far East) with one fully recovered and one improving.
- iii) One (1) had IBS and fatigue. Symptoms improving.

The patients who showed improvement but did not have follow-up PEG tests suffered from: Post viral fatigue, IBS, Fibromyalgia and recurrent cystitis respectively.

3) One (1) showed a worsening of her PEG result but improved symptoms (auto-immune hepatitis with cirrhosis).

4) One (1) showed no clinical improvement - Sjögens syndrome.

Discussion:

The study population is not large enough to make clear conclusions. However, *Coriolus versicolor* supplementation may be useful in some cases of LGS. From these results it seems likely that the response is particularly prominent in those patients with a viral causation of

LGS. This may fit in with studies to date indicating Natural Killer cell or Th1 stimulation by *Coriolus versicolor* (3,4). In future it would be desirable to screen those LGS patients with low natural killer (NK) cell activity and low T cell function and examine the effect of supplementation in this subset of LGS patients.

Conclusion:

Coriolus versicolor supplementation (4.5 grams per day over 12 weeks) may have a beneficial impact on Leaky Gut Syndrome (LGS) patients. However, due to the small number of patients treated with *Coriolus versicolor* supplementation, we have a "curiosity". Further clinical work is required to assess the effectiveness of *Coriolus versicolor* supplementation in a larger number of Leaky Gut Syndrome patients.

(1) Altered Immunity & Leaky Gut Syndrome by Zoltan P. Rona MD, MSc. Page 1 (www.afpafitness.com/articles/LEAKGUT4.HTM)

(2) Ibid page 1.

(3) Observational Non-Controlled Study of the Use of *Coriolus versicolor* Supplementation in 30 Cancer Patients by Dr. Julian Kenyon. Mycology News Vol 1. Edition 7. (see newsletter section of www.mycologyresearch.com)

(4) The Use of *Coriolus versicolor* Supplementation in Chronic Fatigue Syndrome (CFS) Patients by Dr. Jean Monro Vol 1. Edition 8. (see newsletter section of www.mycologyresearch.com)

(5) The Possible Role of Mushroom Nutrition as a Delivery Agent for Enzyme Therapy in Cancer Care-Chemical and Biological Properties of Mushroom Nutrition – Prof. Amin Karmali. Mycology News Vol. 1 Edition 7 (see newsletter section of www.mycologyresearch.com)

(6) Detoxification-The Role of Mushroom Nutrition-Prof. Amin Karmali, Mycology News Vol. 1 Edition 9 (see newsletter section of www.mycologyresearch.com)

Coriolus versicolor (also known as *Trametes versicolor*) was supplied by Mycology Research Laboratories Ltd. –Coriolus-MRL (www.mycologyresearch.com)

The Diagnostic Clinic offers diagnostic LGS screening services that include PEG testing and interpretation to complementary medicine practitioners. For more information please contact Ms. Pat Starkey, Clinic Manager, The Diagnostic Clinic, 50 New Cavendish Street, London W1G 8TL, Tel:44-207-009-4650 or info@thediagnosticclinic.com

Use of *Coriolus versicolor* in Chronic Fatigue Syndrome

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Dr. Jean Monro has a background in hospital general medicine and worked at the National Hospital for nervous diseases, Queen's Square, London, (researching migraine and multiple sclerosis). She entered full time practice in Environmental Medicine in 1982 and in 1988 founded the Breakspear Hospital for Allergy and Environmental Medicine (www.breakspearmedical.com). The Breakspear Hospital, an outpatient hospital, is focused on the treatment of Chronic Fatigue Syndrome, allergies and other immune related disorders. Breakspear Hospital is located at: Hertfordshire House, Wood Lane, Hemel Hempstead, Herts. HP2 4FD, United Kingdom. www.breakspearmedical.com

The following is an excerpt from a recent article by Dr Jean Monro in the Online Journal of Integrative Medicine (www.jintmed.com) ⁽¹⁾, which follows her earlier work showing rises in NK cell levels in Chronic Fatigue Syndrome (CFIDS) patients in response to supplementation with *Coriolus versicolor* ⁽²⁾.

Chronic fatigue, also referred to as epidemic myalgia, myalgic encephalomyelitis, chronic viral syndrome and post viral fatigue syndrome, is a complex clinical syndrome. It is characterized by incapacitating fatigue, neurological problems and a constellation of other symptoms that can resemble many other illnesses.

Amongst the causes of CFIDS are post-viral disruptions of immune function (PVS). A variety of viruses have been implicated in the development of CFIDS including Herpes viruses (EBV, CMV, Herpes Simplex and Human Herpes 6) Polio, Coxsackie, Adenoviruses and Retroviruses. Other causes may include exposure to chemicals such as pesticides and organic solvents.

Patient Profile

36 patients were selected on the basis of international criteria for the diagnosis of chronic fatigue. Ages ranged from 17 years to 83 years and there was a female-to-male ratio of 2:1.

Treatment

Patients were given 6 *Coriolus*-MRL tablets daily for 15 days (3 g/ day), followed by 3 tablets daily for 45 days (1.5 g/ day).

Results

The following 8 immunological parameters were measured before and after supplementation:

- i) T lymphocyte subsets
- ii) Natural killer cells CD3-CD16+CD56 α
- iii) EBV viral capsid antibody immunoglobulines IgG and IgM
- iv) EBV early antigen antibody diffuse IgG
- v) EBV nuclear antigen antibody
- vi) EBV nuclear antigen IgM
- vii) Human herpes virus 6 (HHV6) IgG;
- viii) Cytomegalovirus (CMV) IgG and IgM.

Viral Levels – All patients were found to have combinations of high antibody levels to EBV and/or HHV6 or CMV prior to treatment.

Natural Killer Cells – before treatment the average NK cell level was 129.64/mm³. After treatment this had increased to 175/mm³, an increase of 35%.

T cells (CD3+CD26) – there was increased activation in 66% of patients.

Conclusion

Supplementation with *Coriolus*-MRL shows improvements in both immune parameters and viral levels, indicating that it has the potential to play a significant role in the treatment of CFIDS and other chronic viral conditions.

References

- 1) The Use of Medicinal Mushroom *Coriolus*-MRL as an Immunotherapeutic Agent in the Treatment of Patients with Chronic Fatigue Syndrome. Dr. Jean. Monro – On-Line Journal of Integrative Medicine 2004; 8:101-108 (www.jintmed.com) . Scroll down to "Coriolus".
- 2) Treatment of Cancer with Mushroom Products. Dr. Jean Monro. August 2003 (Vol.58 (No.8)) Archives of Environmental Health. (http://www.mycologyresearch.com/pdf/articles/Treatment_of_Cancer_with_Mushroom_Products_abstracts.pdf)



Cytokine Th1 to Th2 Shift can be Reversed by Coriolus

Prospective Trial for HPV Control with Coriolus



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Dr. Jean Monro has a background in hospital general medicine and worked at the National Hospital for nervous diseases, Queen's Square, London, (researching migraine and multiple sclerosis). She entered full time practice in Environmental Medicine in 1982 and in 1988 founded the Breakspear Hospital for Allergy and Environmental Medicine (www.breakspearmedical.com). The Breakspear Hospital, an outpatient hospital, is focused on the treatment of Chronic Fatigue Syndrome, Allergies and other immune related disorders. Breakspear Hospital is located at: Hertfordshire House, Wood Lane, Hemel Hempstead, Herts. HP2 4FD, United Kingdom. Tel: 44-1442-261-333. E-mail: jmonro@breakspearmedical.com / www.breakspearmedical.com.



We have shown that in a group of 36 patients diagnosed with chronic fatigue syndrome according to international diagnostic criteria there were abnormal T-lymphocyte subsets and low NK cell levels. We have established that many of these patients have high titres of antibodies, IgG or IgM to a range of viruses including Epstein Barr virus, Cytomegalovirus and Human Herpes virus 6. In treatment of these patients with Coriolus for an eight week programme, there was a doubling of the levels of NK cells and decreases in viral loads.

It is therefore suggested that it may be possible to minimise the risk of cervical cancer from Human Papillomavirus (HPV) by augmentation of immunological parameters through supplementation with Coriolus. Those at risk of cervical cancer through having contracted HPV as evaluated by PCR techniques could then be protected with Coriolus in a preventative programme.

Week	Number	Folic acid mg per day	Coriolus-MRL gms per day
Week	1	300 mg/day	3 grams /day*
Week	2	10 mg/day	3 grams /day
Week	3	10 mg/day	3 grams /day
Week	4	10 mg/day	3 grams /day
Week	5	10 mg/day	3 grams /day
Week	6	10 mg/day	3 grams /day
Week	7	10 mg/day	3 grams /day
Week	8	10 mg/day	3 grams /day

* 6 tablets per day (2 early in morning, 2 noon and 2 evening)

In our experience, folic acid is also of benefit in the control of HPV and it is proposed that nutritional, microbiological and immune biomarkers be evaluated in order to evaluate the synergistic use of Coriolus and folic acid in the prevention of cervical cancer.

References:

- Bosch, Fx et al. Papillomavirus research update: highlights of the Barcelona HPV 2000 International Papillomavirus Conference. J.Clin Pathol 2001; 54: 163-175.
- Butterworth, CE Jr et al. Oral folic acid supplementation for cervical dysplasia: a clinical intervention trial. Am J Obstet Gynecol 1992 Mar; 166(3): 803-9.
- Kwasniewska A et al. Folate deficiency and cervical intraepithelial neoplasia. Eur J Gynecol Oncol 1997; 18(6): 526-30.

For information on the latest advances in HPV treatment and detection, please review www.hpv2005.org, the website for the 22nd International Papillomavirus Conference and Clinical Workshop.

The Breakspear Hospital offers cervical health screening which includes both the conventional smear test for abnormal cells, together with checks for the virus responsible for cancer of the cervix (Human Papilloma Virus-HPV) and to exclude gonorrhoea and chlamydia. This comprehensive screening is available for £ 135.00. For more information contact Breakspear Hospital at Tel: +44-1442-266-388 or review www.breakspearmedical.com/files/cervical_screening.html

The Use of Mushroom Nutrition in Prostate Cancer: A Case Study

By **G.A. Bates BA., BSc., MSc.** Leicester, England, UK. sammy_bates@btinternet.com

Background

In the UK about 1000 men of working age die every year from prostate cancer, while in the USA the figure is 5 times higher. Following diagnosis the progression to advanced disease status and ultimately death follows a familiar pattern. Failing prostatic surgery and/or radiotherapy, long term hormone treatment impacts on overall health and well being. Malignant refractory disease is virtually inevitable and although intermittent hormone treatment offers some respite, elevated disease markers invariably reappear after a few months or years and a return to debilitating treatment is clinically indicated.

This case study outlines the experience of a 'younger' prostate cancer sufferer (49 years of age at diagnosis) and some general principles that might be applied to the treatment of prostate cancer in the 21st Century.

Foreword

This paper is premised on my publication "A 21st Century Approach to Prostate Cancer", which is available at <http://health.groups.yahoo.com/group/21CAPC/>. The mycology specific account below may be read in conjunction with the wider issues addressed there.* A diagnosis of prostate cancer in 1996 followed many painful months waiting for a doctor to acknowledge that my severe urinary symptoms and PSA (prostate specific antigen) of 50 ng/ml were not a trivial matter.

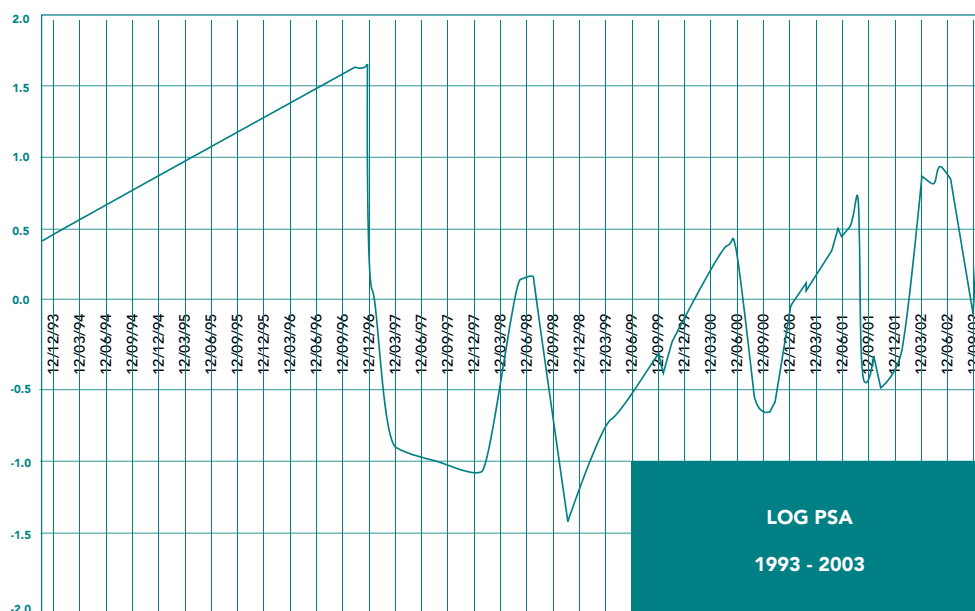
Following initial biopsy and bone scintigraphy scan, my cancer stage was determined as T3N1M0 with Gleason (3+4) cell architecture. This is regarded as severe disease with poor prognosis for anyone at the age of 49, compared to the mean age of diagnosis of 70 years. I was given two to five years life expectancy. I opted – perhaps not

unsurprisingly – for aggressive treatment: a radical prostatectomy. At surgery; lymph node and seminal vesicle involvement was found, making the prognosis just a little worse. Following prostate surgery I endured nearly two years of hormone blockade to shrink and hopefully kill the remaining disease that could not be excised.

The procedure of hormone blockade follows from the discovery by Huggins in the 1940's that castration prolonged the life of men with prostate cancer. Sometimes known as 'hormone ablation therapy' or 'hormone manipulation', and also less flatteringly known as 'castration therapy' or 'chemical castration' (CC) – all of these expressions are interchangeable.

When I came off hormone blockade therapy twenty months later due to treatment intolerance and side effects, my PSA rose suddenly. This was another bad prognostic indicator, according to many experts, and although a repeat bone scintigraphy scan showed no sign of metastatic disease, a radiolabelled monoclonal antibody scan using prostate specific antigen membrane at St. Barts in London in 1998 showed residual disease in the prostatic bed. I opted for yet more aggressive treatment, this time for radiation therapy to the prostatic region, and further hormone blockade.

Although these interventions checked the progress of the disease they did not eliminate it and treatment free periods always resulted in a rising PSA. The following graph covers the period prior to my starting using *Coriolus versicolor* (CV) and *Cordyceps sinensis* (CS) [A larger version of this graph may be viewed at <http://health.groups.yahoo.com/group/21CAPC/>]



continued...

My options at this stage were to stay on the castration therapy for longer periods to ensure that the residual tumor did not infect healthy tissue, go on a course of chemotherapy, take part in an immune study trial, or try something even more radical.

Since none of the former options held out any great hope for long term survival, and since I was determined to 'draw my bus pass at 65' I opted for the radical approach. This included a review of all the salient literature available to me on prostate cancer etiology, epidemiology, treatment and management, and an appraisal of non-orthodox treatments such as PC-SPES, artemisinin and other herbs including traditional chinese medicine (TCM) and mycology nutrition.

Methods and Materials

Mycology nutrition: All products were purchased by the author through various agencies, locally and abroad, including Pure Health Ltd. from whom where the majority of mycology products were obtained. I commenced using Coriolus-MRL in the summer of 2002. In the autumn of 2002 I added Cordyceps-MRL to the protocol in the ratio of 3 Coriolus to 1 Cordyceps. The abbreviation used in the charts is CV/cs to indicate the smaller amount of Cordyceps-MRL.

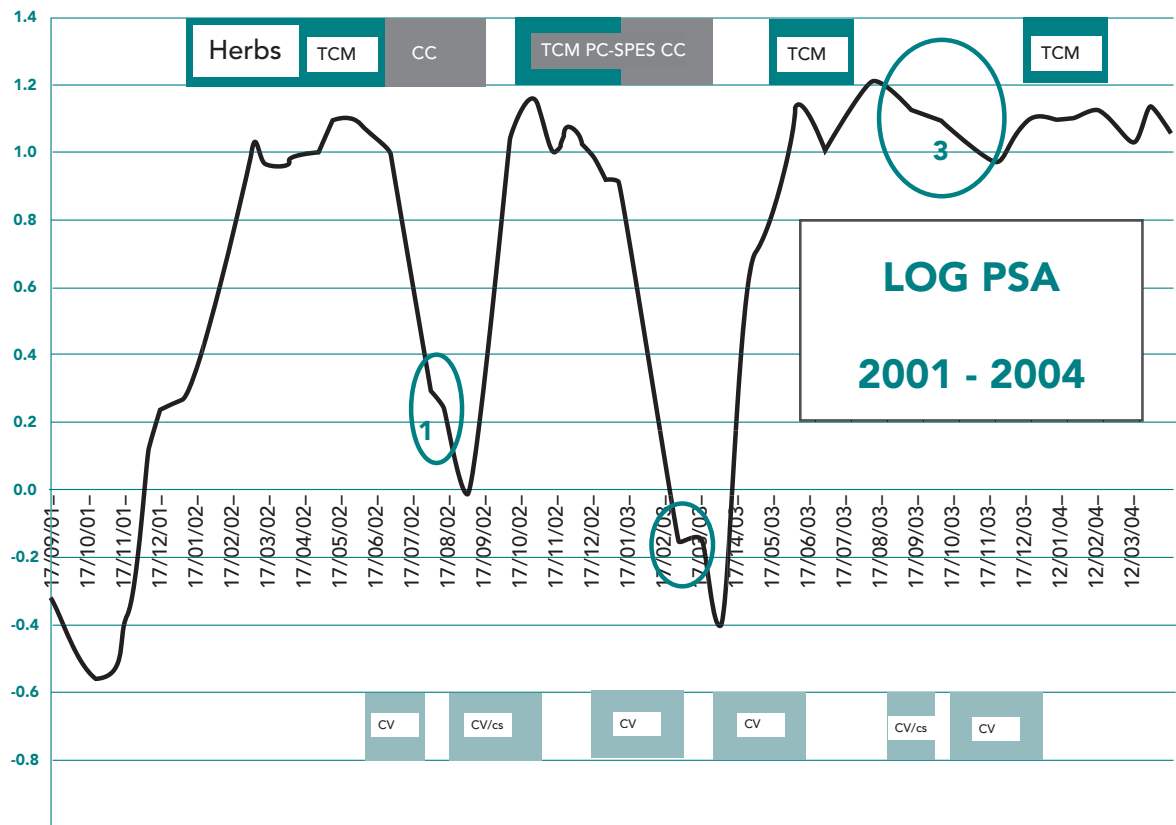
Intermittent hormone blockade: This is a very useful technique to help offset the awful effects of prolonged castration therapy. It was serendipitously discovered by patients who refused to continue with uninterrupted castration therapy after the LHRH-analogs Lupron and Zoladex came on the market. It was observed that these non-compliant patients enjoyed not only an improved quality of life, but also added years of survival. According to Bruchofsky who first formally investigated the use of pulsing hormonal ablation between intermittent periods of normal androgen status, a third or fourth cycle was the maximum a patient might expect before his disease progressed to androgen independent prostate cancer (AIPC). This would be expressed by PSA slope flattening (tending to the horizontal) leading to a raised PSA nadir.

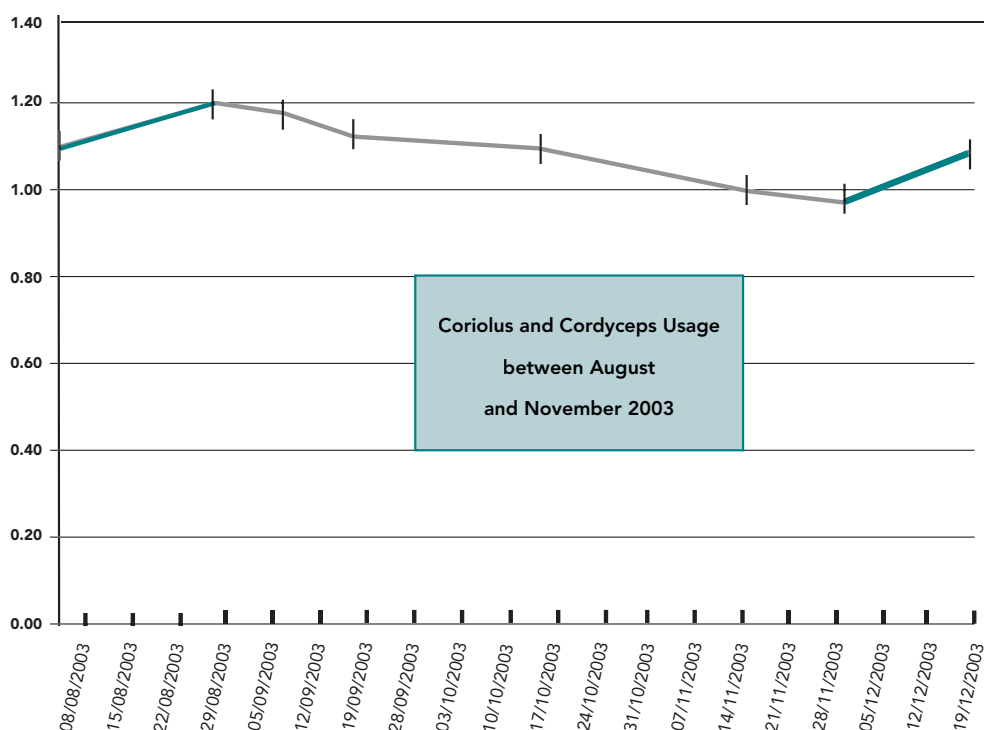
Observations

Initially I just tried Coriolus for a month to assess if it had any impact under the more permanent effect of hormone ablation, stopping in July 2002. There appears to be a small change (red circle #1) associated with stopping Coriolus supplementation that went without much notice at the time because side effects caused by the androgen block were a distraction. Indeed, I soon had to withdraw from the androgen block, gather my energy with the help of CV/cs, and re-start a few months later. In the interim during the latter part of 2002 I noted the change in PSA slope and realised it was something that needed checking out.

In early 2003 I again stopped Coriolus supplementation while on hormone blockade and this time the change in PSA descent was quite noticeable (red circle #2). Throughout this time my androgen status was castrate and there is no question of this abrupt change being androgen driven. I resumed Coriolus supplementation before my PSA had much of a chance to increase. However, because of my intolerance for extended periods of castration therapy I was again forced to cut the hormone treatment short long before my PSA reached its potential nadir.

I say "potential nadir" because the downward curving PSA descent can be extrapolated to lower values. I believe the reason for this is due to Coriolus versicolor and Cordyceps sinensis enhancing the cancer cell kill induced by castration. This is reflected on the graph by a steep PSA descent in March 2003 after resuming Coriolus supplementation. [Note: this is before low-level androgen induction kicks off the PSA rise in the subsequent OFF cycle.] A second period using Coriolus versicolor and Cordyceps sinensis CV/cs is shown in the summer of 2003.





During this time of predominantly Coriolus-MRL use my PSA stabilised at approximately 10 ng/ml. Although the ideal PSA for someone who has had a radical prostatectomy and salvage radiation would be zero, the stabilisation of a finite PSA is most unusual. This is more so with continued evidence of residual radioisotope uptake in the prostatic bed from a more recent soft tissue scan at St. Bartholemew's Hospital in February 2004.

I believe the reason for this stabilisation can be attributed to the synergistic apoptotic effect of higher levels of androgen plus Coriolus and Cordyceps. Indeed my contention now is that Coriolus and Cordyceps potentiate the two means for reducing PSA that I have investigated: 1. castration therapy and 2. positive androgen management.

In other words, the use of Coriolus and Cordyceps stretches out the intermittent gaps that Bruchovsky has described, making Coriolus enhanced intermittent hormone ablation combined with positive androgen management a long term possibility for men who would otherwise perish in a few years on conventional hormone management alone.

I found Coriolus and Cordyceps easy nutritional supplements to take. There was never a problem with digestion as is often the case with herbal products. During castration therapy with Coriolus and Cordyceps supplementation, my daily exercise routine was not compromised due to fatigue. I maintained an output of over twelve miles per week jogging and, on average, three light to medium maintenance weight training sessions per week.

Summary

The most recent off-treatment epoch has lasted from early 2003 until today. This was preceded by intermittently supplementing with up to three (3.0) grams (6 tablets x 500 mg) of Coriolus-MRL (biomass of *Coriolus versicolor*) and one gram (2 tablets x 500 mg) of Cordyceps-MRL (biomass of *Cordyceps sinensis*), three times a day and resulted in a very steep PSA decline followed by many months of stable PSA. Coming up to nine years after a very poor prognosis for advanced

prostate cancer, this is a happy conclusion to a desperate situation.

Although the use of Coriolus and Cordyceps is often quoted in the context of adjuvant support for radiotherapy or chemotherapy, their use in this case has been shown to augment the natural apoptotic characteristic of castration therapy and normal androgen levels, making them a novel agent for management of prostate cancer throughout the intermittent hormone treatment cycle that is now favoured by many men treated for prostate cancer.

The fact that Coriolus and Cordyceps potentiate existing treatments may be a particularly important attribute for men whose disease is so advanced they are nearing the end of effective hormonal or combined hormonal and chemical therapy.

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Mushroom Nutrition and Prostate Health: Additional References:

1. Cell growth and gene modulatory activities of Yunzhi (Winsor Wunxi) from mushroom *Trametes versicolor* in androgen-dependent and androgen-insensitive human prostate cancer cells. Hsieh TC, Wu JM- Department of Biochemistry and Molecular Biology, New York Medical College, Valhalla, NY 10595, USA- Int. J Oncol. 2001 Jan;18(1):81-8.
2. Antimetastatic effects of PSK (Krestin), a protein-bound polysaccharide obtained from basidiomycetes:an overview. Kobayashi H, Matsunaga K, Oguchi Y.-Health Science University of Hokkaido, Japan-Cancer Epidemiol Biomarkers Prev. 1995 Apr-May;4(3):275-81.
3. A polysaccharide isolated from *Cordyceps sinensis*, a traditional Chinese medicine, protects PC12 cells against hydrogen peroxide-induced injury. Li SP, Zhao KJ, Ji ZN, Song ZH, Dong TT, Lo CK, Cheung JK, Zhu SQ, Tsim KW. Institute of Chinese Medical Sciences, University of Macau, Taipa, Macau, China.-Life Sci. 2003 Sep 26;73 (19):2503-13.

Mushroom Nutrition as

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As outlined in Mycology News 9, *Coriolus versicolor* may provide veterinarians with an immunonutrition tool when faced with palliative care decisions in small pets with fibrosarcomas.

After the age of six (6) years, the immune systems of dogs, cats and other large animals weaken and as a result tumours (fibrosarcomas) routinely occur and are responsible for the deaths of more than 50% of animals over ten (10) years of age. It is believed that appropriate immune support can control or slow down the growth of tumors.

The following is a case study with a nine (9) year old Irish Setter (dog) suffering from multiple fibrosarcomas of the prostate gland.

Subject: Irish Setter (9 years old) with prostate tumour

Observation 1: May 12th, 2005

On the 12th of May, 2005 a nine year old Irish Setter (Boss) visited my clinic. Boss had been suffering for over a month with blood in the urine, low energy level, low appetite, and was lethargic in general. He weighed 25 to 27 kilos.

His coat was not healthy with visible alopecia (baldness) in sections of his back and hindquarters.

The immediate objective was to conduct two abdominal ecographies (1) and (2) at the Lisbon Veterinary Medicine School by Dr. Nuno Felix and to conduct a stool analysis and skin analysis at the Laboratorio Nacional de Investigação Veterinaria. Both exams were conducted on the 13th of May, 2005.

Results of Exams – May 13th, 2005

The analysis concluded the following:

Bladder: Thick, irregular walls (3,4mm) presenting a small polyp about 5mm in size with sediment (accumulation). No images compatible with lithiasis. Observation was compatible with cystitis. We recommend urine analysis. Polyp of inflammatory or other nature. We advise surveillance and a new echographical examination after cystitis treatment and, if necessary, biopsy.

Prostate gland: Hypertrophy and hyperechogenicity (suggestive of metastasis). Cysts / abscesses with approximate size of 5 mm surrounded by hyperechogenic region on dorsal zone of the prostate (inflammation?)

Kidney: Left 6 x 3 cm; and right 5.8 x 2.8 cm. Good cortex /medulla transition, although the renal cortex presents a moderate hyperechogenicity (echogenicity relation with liver and spleen is maintained), suggestive of interstitial fibrosis or glomerulopathy /nephrosis /nephritis. No visible calculi.

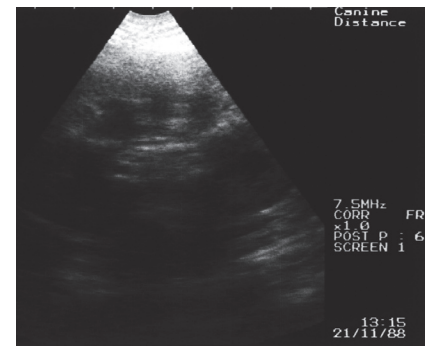
Spleen: Normal

Suprarenal glands: Left: 8 mm diameter (normal 6 mm). An 8 mm diameter can be a normal finding in older animals. This observation is only significant in combination with the other findings. Right: normal.

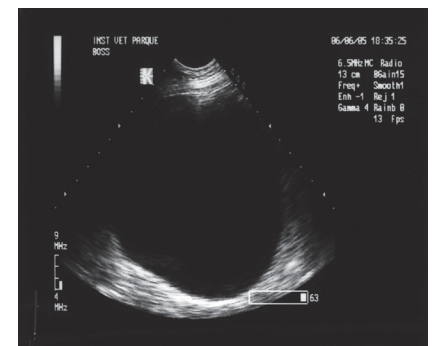
Liver: Apparently small (although abdominal radiography is better for diagnosis) and hyperechogenic (fibrosis?? Inflammatory infiltration? In some cases this finding is associated to infiltrations like linforma, although in this case the liver is enlarged).

Gallbladder: Thickened walls and sediment.

Stomach: Normal



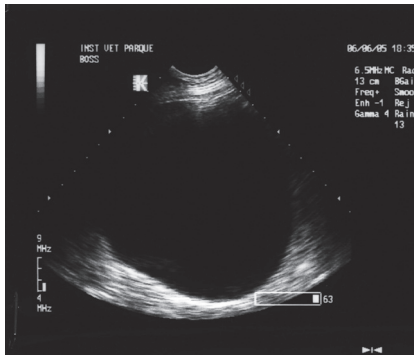
Ecography 1



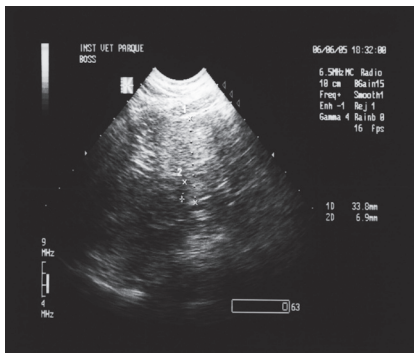
Ecography 2

Immunonutrition in Dogs

Dr. Girao Bastos is a leading Portuguese veterinarian based at the Laboratorio Nacional de Investigação Veterinária in Lisbon. Dr. Bastos also has a private practice in Lisbon at Clinica Veterinaria. Dr. Girao Bastos can be reached on Tel: + 351-21-916-5982.



Ecography 3



Ecography 4

Supplementation: On May 14th, 2005 non-fractionalized *Coriolus versicolor* supplementation was initiated with the following schedule*:

Days 1-30: 6x500mg tablets per day (tablets crushed and mixed with meals).

Days 30-90: 3x500mg tablets per day (tablets crushed and mixed with meals).

In addition, on May 14th, 2005, an antibiotic Giroflox (ciprofloxacin) was prescribed for seven (7) days for treating cystitis symptoms. Dosage prescribed:

-First two days (3 x 500 mg per day-every 8 hours)

-Next five days (2 x 500 mg per day-every 12 hours)

Observation 2: June 6th, 2005

(21 days after initiating supplementation with *coriolus versicolor*)

Boss was more energetic and had regained his appetite.

Two additional abdominal ecographies were conducted at the Institute of Veterinary Medicine by Professor Dr. Jose Sales Luis (3) and (4). The analysis concluded the following:

Bladder: improved. No sign of cystitis and thickness of the wall and no sediment. The polyp is no longer visible, suggesting an organized sediment that has disappeared with medication.

Prostate gland: normal. (3, 5 cm, regular echogenicity) with a small cyst (+/- 6 mm).

Kidney: Left normal and right normal.

Liver: normal

Gallbladder: presents some sediment.

Spleen: normal

Others: without masses compatible with tumour. No ascetic liquid.

Observation 3: June 23th, 2005

ECG: An ECG was also performed which was regular with slight QRS morphology alteration, linked to ventricular hypertrophy. We recommend treatment should clinical signs develop.

Discussion: This case is further anecdotal evidence that *Coriolus* supplementation may play a significant role as immunonutrition in dogs with evidence of pre-cancerous lesions. Further clinical study is required, with a greater sample size. Nevertheless, *Coriolus* supplementation continues to demonstrate the capacity to be an important adjuvant nutrition method for clinicians when faced with palliative cases in both dogs and cats.

Finally, it must be remembered that *Coriolus versicolor* supplementation is not a substitute for any existing medical procedure or medical product. *Coriolus versicolor* supplementation should be considered as complementary immunonutrition to support a small pet's immune system.

* *Coriolus versicolor* was supplied by Mycology Research Laboratories Ltd. under the brand name Corpet. For additional information please see "Animal Health" section at: www.mycologresearch.com.

The Effectiveness of *Ganoderma lucidum* (Reishi) supplementation in the Treatment of Gout

John Tindall, Yuan Clinic, London, UK.

John Tindall (Dip. Ac.) is a UK-based TCM practitioner who founded the first NHS outpatient TCM clinic (the Gateway Clinic of Lambeth NHS Trust). In 1999, he founded the Yuan Clinic, located 7 Clapham High Street, London SW4 7TS, United Kingdom Tel/ Fax:44-207-622-9079 www.yuantmc.com.

Aim of Study

To assess the efficacy of non-fractionalized *Ganoderma lucidum* supplementation in three (3) patients with Gout. The principal parameters being perceived pain, quality of life assessment as well as elimination of use of steroids and non-steroidal anti-inflammatory products to control both pain and inflammation in joints.

Condition

Gout is a disorder characterized by sudden, recurring attacks of very painful arthritis caused by deposits of monosodium urate crystals, which accumulate in the joints due to an abnormally high uric acid level in the blood (hyperuricemia). Joint inflammation can become chronic and deforming after repeated attacks. Almost 20% of people who have gout develop kidney stones.

Uric acid is present in the blood from cell breakdown and from the presence of uric acid precursors in familiar foods. Uric acid levels become abnormally high when the kidneys cannot eliminate enough in the urine. The body may also produce excessive amounts of uric acid because of an hereditary enzyme abnormality or a disease such as blood cancer in which cells multiply and are rapidly destroyed. Some types of kidney disease and certain drugs also impair the ability of the kidneys to eliminate uric acid.

Study Design

Open label study in three (3) male patients over the age of 35 with Gout. Prior to *Ganoderma lucidum* supplementation all three patients experienced extreme pain and inability to walk.

Supplementation Schedule

Daily *Ganoderma* supplementation commenced at 3.0 grams (6 x 500 mg tablets) with 2 tablets taken 30 minutes prior to breakfast, lunch and dinner for four (4) weeks; followed by 2.0 grams per day with 2 tablets taken 30 minutes prior to breakfast and dinner for six (6) weeks and then 1.0 gram with 1 tablet taken 30 minutes prior to breakfast and dinner for a further six (6) months.

Results

After four (4) weeks supplementation all three patients reported less pain, increased energy and were able to resume walking.

During the first ten (10) weeks, patients refrained from alcohol intake. During the final six month period, patients were able to resume moderate alcohol intake and no further symptoms of gout were noted.

Discussion

The anti-inflammatory activity of *Ganoderma lucidum* is well established and has been identified with the family of Ganoderic acids. An extract of Ganoderic acid has also been patented for use as a topical anti-inflammatory ⁽¹⁾.

Conclusions

The findings from this open label study confirm the anti-inflammatory properties of whole *Ganoderma lucidum* biomass and its potential for providing relief from a range of inflammatory conditions, including gout.

At an estimated daily cost of £ 1.10 per day (3.0 grams per day or 6 tablets per day) for the first four weeks of supplementation, *Ganoderma lucidum* may offer a safe and affordable alternative to conventional gout treatment. Further research is required to explore this curiosity in greater detail.

(1) The Use of *Ganoderma lucidum* (Reishi) in the Management of Histamine-Mediated Allergic Responses. Mr. Martin Powell – Mycology News Vol 1. Edition 8 (. (see newsletter section of www.mycologyresearch.com)

Agaricus blazei

New Developments in Mushroom Nutrition



Professor Amin Karmali

Professor Amin Karmali is a leading mushroom enzyme researcher based in the Instituto Superior de Engenharia de Lisboa (Biotechnology Section) Rua Conselheiro Emídio Navarro 1900-Lisboa. Contact numbers are Tel: 351-21-831-7052; Fax: 351-21-831-7267; email: akarmali@isel.ipl.pt)



Agaricus blazei

The basidiomycetes fungus *Agaricus blazei* has been found to be useful as a health food for prevention of cancer, diabetes, hyperlipidemia, arteriosclerosis and chronic hepatitis (1-3). It contains several important biomolecules, including polysaccharides, glycoproteins, antibiotics, triterpenes, ergosterols and other secondary metabolites (4,5). The hot water extract of *Agaricus blazei*, which has been identified as a β -1,6 glucan fraction, has been shown to have potent anti-tumour activity.

Ergosterol from the lipid fraction has also been identified as a potent anti-tumour agent.

As well as the water soluble and lipid fractions, enzymes also play an important role in the anti-tumour activity of mushrooms and enzymes including superoxide dismutase, glutathione peroxidase and catalase all play an important role in boosting energy, fighting inflammation and enhancing anti-oxidant activity.

As outlined in the following table, the amount of Superoxide dismutase activity in *Agaricus blazei* is 275.0 U per gram. This is nearly three times that found in either *Coriolus versicolor* or *Cordyceps sinensis* (see Mycology News 9 - Detoxification-The Role of Mushroom Nutrition).

Superoxide dismutase is essential to counteracting reactive oxygen species, or superoxide radicals ("free radicals"). A number of pathological changes, including carcinogenesis and cellular degeneration related to aging, are due to reactive oxygen species. These reactive oxygen species are produced by sunlight, ultraviolet radiation, chemical reactions, as well as by metabolic processes, and are toxic to living cells since they oxidize and degrade important biological macromolecules such as lipids and proteins (1).

Central to the body's ability to resist the harmful effects of reactive oxygen species are a number of enzyme systems, prominent among which is Superoxide dismutase, which catalyses the destruction of superoxide radicals and hence protects oxygen-metabolizing cells from damage by these free radicals. Several researchers have shown that Superoxide dismutase is involved in diseases as diverse as Parkinson's disease, cancer and anemia (1, 2).

*Agaricus blazei**

The following table shows the levels of enzymes, reducing sugars and protein bound polysaccharides content found in *Agaricus blazei* biomass:

Content per gram of biomass
(in the absence of Proteolytic Enzymes)

1	Cytochrome P- 450	0.45 nmoles
2	Cytochrome P- 450 reductase	8.90 mU
3	Xylanase	12.80 U
4	Celulase	0.38 U
5	Amyloglucosidase	0.80 U
6	Protein bound polysaccharides	87.6 mg
7	Proteins	5.16 mg
8	Reducing sugars	20.38 mg
9	Superoxide dismutase (SOD)	275.0 U
10	Protease	11.2 U

References:

1. Angelova, M., Stoeva, S and Voelter, W. (2001) " A Novel Glycosylated Cu/Zn containing superoxide dismutase:production and potential therapeutic effect" Microbiology 147, 1641-1650.
2. Jacob, C., Courbot, M. , Brun, A. and Chalot, M (2001) "Molecular cloning and regulation of superoxide dismutase from fungus *Paxillus involutus*" Eur. J. Biochem. 268 , 3223-3232.

*Mushroom samples of *Agaricus blazei* were composed of the mycelium and the primordia in a biomass form and were provided by Mycology Research Laboratories Ltd.

Bastyr Secures CTRF Funding for Mushroom Immunonutrition Trial in Breast Cancer

Professor Leanna J. Standish (ND, PhD, LAc) from the School of Naturopathic Medicine at Bastyr University has received funding from the Cancer Treatment Research Foundation (CTRF) to perform a placebo-controlled clinical trial looking at the effects of a Turkey Tail mushroom (*Trametes versicolor**) supplement on the immune system, quality of life and fatigue of women with breast cancer after completing radiation therapy.

Dr. Standish requested Mycology Research Laboratory Ltd (MRL - www.mycologyresearch.com) to supply *Trametes versicolor* product and placebo for the study. Dr. Standish determined that MRL was one of the few western phytopharmaceutical firms to publish clinical data on *Trametes versicolor**. Furthermore, MRL's pharmaceutical GMP production standards meet Bastyr's quality control criteria for clinical studies.

Bastyr University research faculty have been scientifically evaluating the anti-cancer and immune modulating effects of medicinal mushrooms since 2002. In 2004 the University of Minnesota and Bastyr University partnered together to create the NIH-funded Developmental Clinical

Research Center to evaluate the effects of *Coriolus versicolor* (AKA *Trametes versicolor*) in breast and prostate cancer.

Bastyr University (www.bastyr.edu), located north of Seattle, Washington, is one of the world's leading academic centers for advancing knowledge in the natural health sciences. A twenty-five year pioneer in natural medicine, Bastyr is also committed to evaluating natural therapies and has played a key role in the growth of complementary and alternative medicine research in the United States.

Based in Schaumburg, Illinois, the Cancer Treatment Research Foundation (CTRF www.ctrf.org), is a 501 c (3) non-profit organization founded in 1991. CTRF is dedicated to moving the best cancer research from the laboratory to the bedside of patients fighting for their lives. Sponsoring 59 innovative research studies that vary from immunotherapy to pain management, CTRF supports some of the most gifted researchers in conventional, integrative and complementary medicine.

* *Trametes versicolor* is also known as *Coriolus versicolor*.

For more information contact: Jose Berger, Project Manager at: jberger@bastyr.edu

The Global Leader in Mushroom Nutrition Products

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MRL's proprietary cultivation technology consistently produces uniform, contaminate-free, mushroom biomass powder; in accordance with the California Organic Food Act of 1990.

The biomass powder is then manufactured into 500-mg tablets to pharmaceutical GMP standards in the United Kingdom.



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