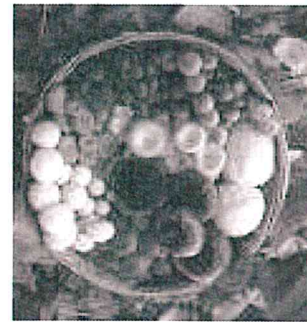




Volume 1, Edition 4

Welcome to the fourth 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 fourth edition, we look at the possible link between viruses and cancer and focus on the clinical use of *Coriolus versicolor* in the treatment of Chronic Fatigue Syndrome (CFS) and fatigue during radiotherapy. Our mushroom focus is on Maitake (*Grifola frondosa*).



The Virus-Cancer Link

A concept that is gaining ground in the conventional as well as the alternative medical fields is that of a link between viruses and cancer ⁽¹⁾.

Virus

Human Herpes virus-8 (HHV-8)

Human Papillomavirus (HPV)

Epstein-Barr virus (EBV)

Hepatitis B virus

Cancer

Kaposi's sarcoma (KS)

Cervical cancer

Vulva cancer

Vagina cancer

Nasopharyngeal carcinoma

Burkett's lymphoma

B-cell lymphomas in AIDS patients

Hodgkin's diseases.

Breast cancer

Hepatocarcinoma (Liver cancer)

The link between Kaposi's sarcoma and HHV-8 (or Kaposi's sarcoma herpes virus, KSHV) was established by Dr. George Miller of Yale University School of Medicine using representational difference analysis. Other syndromes linked to HHV-8 in immuno-compromised hosts include Primary Effusion Lymphoma (PEL) and Multicentric Castleman's disease. (2,3)

At least 80% of women are infected with HPV within 4 years of their becoming sexually active. The connection between HPV and cervical cancer is of particular importance as cervical cancer is the fifth most common cancer in humans and the second most common cause of cancer death in women. At least 90% of all cervical carcinomas are thought to be related to HPV infection. HPV-16 accounts for more than 50% of cases world-wide, and HPV-18 accounts for about 14%.(4).

Breast cancer, a multiple-step disease which is the number one cause of cancer-related deaths in women has also been linked to a virus, this time the Epstein-Barr virus (EBV) (5,6,7). In some countries, an overlap between regions with high incidences of EBV-associated lymphomas and a high frequency of male breast cancer has been reported (6)(8). Furthermore, EBV-associated lymphomas have been reported to be localised in the breast. (9)(10)

In two polymerase chain reaction (PCR) studies, EBV was observed in 20%-40% of breast tumours assessed. Labrecque et al. identified EBV encoded small RNA1 (EBER-1) in a fraction of malignant cells in six different breast tumours while Bonnett et al demonstrated the presence of EBV genome in a large subset of breast cancers (6) (11). The virus was restricted to tumour cells and was more frequently associated with the most aggressive tumours (12) .

The aforementioned links between viruses and select cancers have only been confirmed in the past few years. However, the implications for preventative medicine and preventative nutrition in cancer care are significant.

Theoretically, upon detection of the aforementioned viruses, a doctor may prescribe Chiron's immunostimulant, Macrolin (aldesleukin/interleukin-2) or suggest a diet that will increase the patient's cell mediated immune response (TH1 immune response), thereby allowing the body to inactivate the virus through increased NK cell activity.

Given that long chain polysaccharides found in various mushrooms have been shown to be potent immune modulators (boosting antiviral activity of the host immune system) mushroom nutrition could offer a promising tool for "preventative" nutritional care. *cont. page 4*

Pioneering Work at Breakspear Hospital on Coriolus Supplementation for CFIDS/ME patients

Dr. Jean Monro (MB, BS, MRCS, LRCP, FAAEM, DIBEM, MACOEM) is the founder of Breakspear Hospital, a UK based outpatient clinic devoted to immune compromised patients. She is one of the leading UK specialists in the treatment of ME/CFIDS and consultant physician to Fachkrankenhaus, Nordfriesland - Bredstedt, Germany.

Dr.Monro has observed that patients with Chronic Fatigue Syndrome (CFIDS) have low levels of natural killer cells (NK cells) and that changes in NK cell levels is an accurate indicator of the progress or otherwise of the condition (1).

In the work reported here, Dr.Monro used the level of NK cell activity, measured by AAL Reference Laboratories Inc. (<http://antibodyassay.com>), as an indicator of CFIDS levels in fifteen patients taking Coriolus-MRL supplementation.

Supplementation Schedule: From May to September 2000, fifteen CFIDS diagnosed patients were given a supplementation level of six 500 mg tablets per day of Coriolus-MRL (3 tablets morning and evening - 3 grams per day) for fifteen days. This schedule was followed by a decrease in supplementation level to 3 tablets per day in the morning for 45 days. At the end of the supplementation period, the patients were assessed according to changes in their NK cell activity (measured in lytic units-CMM).

Supplementation Schedule for Chronic Fatigue Syndrome

WEEK	TABLETS/DAY	TOTAL TABLETS PER WEEK	90 TABLET BOTTLES
1	6	42	
2	6	42	
3	3	21	
4	3	21	
5	3	21	
6	3	21	
7	3	21	
8	3	21	3

fig 1. Dr.Monro - Supplementation Protocol - Coriolus-MRL

Observation 1 (September of 2000):

According to Immunosciences Laboratory Inc., CFIDS patients have a NK cell activity level of approximately 13±6 units, while cancer patients have an activity level of 5±6 units. In a healthy individual the level is 41± 19 units. After Coriolus-MRL supplementation the average increase in NK cell activity for the fifteen patients was 31 CMM.

This average increase is significant and while not up to the "normal" level (41 + 19 Units), the results provide evidence that Coriolus-MRL increases NK cell activity and this may have a bearing on the ability of Coriolus to relieve the fatigue symptoms suffered by ME/CFS patients.

Dr.Monro's study is ongoing and these results are preliminary. For those wishing to request further details of her work Dr.Monro can be contacted at Breakspear Hospital on Tel: +44 (0)1442 261-333, Fax: +44 (0)1442 266-388.

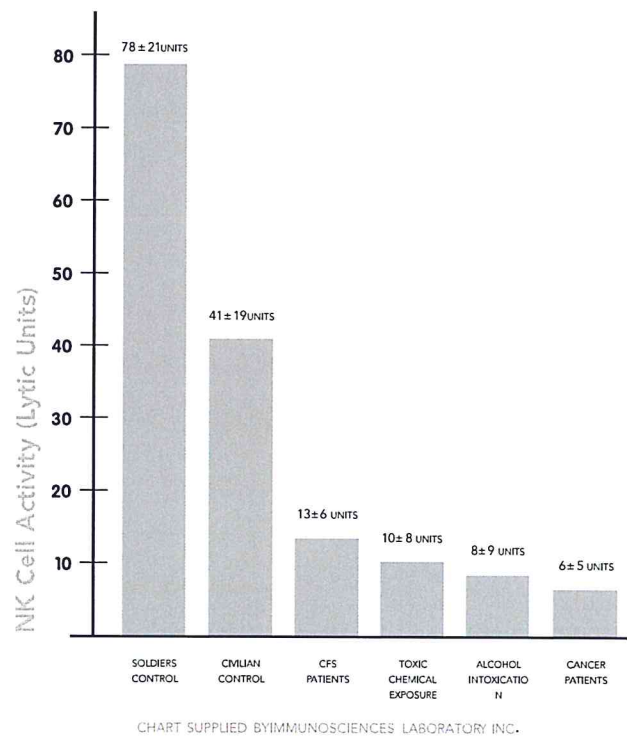


fig 2. NK Cytotoxic activity of US Army soldiers, civilian controls and their comparison with chronic fatigue patients; toxic chemical exposure; alcohol intoxication and cancer patients.

Note: The two fold increase of NK activity in U.S. Army soldiers and significant decrease of NK activity in patients with immunological disorders ($P < 0,0001$).

References:

1. Caligiuri M et al. Phenotypic and Functional Deficiency of Natural Killer Cells in Chronic Fatigue Syndrome. J Immunol 1987 139 (10) 3306-13.

For more information on Coriolus versicolor please see Mycology News-3rd Edition, with copies of the back issues of Mycology News available under the R&D section of <http://www.mycologyresearch.com>

The Use of Coriolus-MRL Supplementation in Lung Cancer Patients Undergoing Radiotherapy

It is very common for radiotherapy patients to become anaemic as a consequence of radiotherapy and, depending on the stage of the cancer, for many to discontinue treatment due to fatigue.

Based on information provided by Mycology Research Laboratories, Dr. Jose Catita (MD), the head radiotherapist for lung and thorax cancer patients at the Lisbon-based Instituto Portuguesa de Oncologia (Fax: +351 (0)21 722-9836) agreed to conduct a pilot study on the use of Coriolus-MRL supplementation to reduce fatigue in three lung cancer patients undergoing radiotherapy.

The patients involved had been diagnosed with adenocarcinoma (stage III) and were to undergo a six week program of radiotherapy at doses of 40Gy + 20 Gy per week.

Response was measured in terms of four variables:

- 1) Erythrocyte count
- 2) Hemoglobin
- 3) Leukocytes
- 4) Platelet count

Supplementation Schedule: Supplementation started at six tablets per day of Coriolus-MRL (500 mg per tablet of Coriolus versicolor - 3 grams per day) in the first week before being increased to 9 tablets (4.5 grams) a day in the second week and 12 tablets per day (6 grams) in the third week. Supplementation in weeks 4-6 was maintained at 12 tablets (6 grams) per day. Supplementation was divided evenly between morning (6 tablets) and evening (6 tablets).

Coriolus-MRL Schedule for Fatigue During Radiotherapy

WEEK	TABLETS/DAY	NO. OF CORIOLUS-MRL TABLETS /WEEK	NO. OF CORIOLUS-MRL 90 TABLET BOTTLES
1	6	42	
2	9	63	
3	12	84	
4	12	84	
5	12	84	
6	12	84	
		441	5

Patient A (Female, 32 years)

Stage IIIa patient with severe tumour on upper right hand shoulder. She has a 15% to 20% chance of surviving 5 years. Patient A is seeking a second opinion in the United Kingdom.

Patient A Female, 32 years

Weeks	1	2	3	4	5	6
Erythrocyte count	3.540.000	3.620.000	3.650.000	3.680.000	3.670.000	3.740.0
Hemoglobin	11,3	11,7	11,7	12	12	12,1
Leukocytes (WBC)	7.800	7.700	7.900	8.100	8.150	8.200
Platelet Count	331.000	336.000	336.000	340.000	338.000	341.000

Normal Readings Female

4.600.00-5.400.000
12.0-16.0
4.000-11.000
150.000-350.000

Observations: Over the course of six weeks, Patient A's erythrocyte count, hemoglobin, WBC and platelet improved steadily. Hemoglobin entered into the normal range as well. Only erythrocyte count remained below the normal range throughout the six week period.

Patient B (Male, 63 years)

Stage IIIa patient with 15% to 20% chance of surviving 5 years.

Patient A Female, 32 years

Weeks	1	2	3	4	5	6
Erythrocyte count	4.300.000	4.290.000	4.310.000	4.300.000	4.315.000	4.400.000
Hemoglobin	13,1	13	13,2	13	13.3	13.5
Leukocytes (WBC)	7.200	7.300	7.350	7.350	7.400	7.500
Platelet Count	265.000	270.000	271.000	269.000	272.000	276.000

Normal Readings Male

4.600.00-6.200.000
13.5-18.0
4.500-11.000
150.000-350.000

Observations: Over the course of six weeks, Patient B's erythrocyte count, hemoglobin, WBC and platelet improved. However, erythrocyte count remained below normal range throughout the six week period.

Patient C (Male, 59 years)

Stage IIIa patient with 15% to 20% chance of surviving 5 years.

Patient C Male, 59 years						
Weeks	1	2	3	4	5	6
Erythrocyte count	4.210.000	4.200.000	4.200.000	4.250.000	4.260.000	4.270.000
Hemoglobin	12,3	12,2	12,3	12,4	12,7	13,1
Leukocytes (WBC)	7.200	7.300	7.350	7.350	7.400	7.500
Platelet Count	164.000	163.000	167.000	171.000	171.000	171.000

Normal Readings Male

4.600.00-6.200.000

13.5-18.0

4.500-11.000

150.000-350.000

Observations: Over the six week course, Patient C's erythrocyte count, hemoglobin, WBC and platelet count improved. However, both hemoglobin and erythrocyte count remained below normal range throughout the six week period.

General Observation: Dr. Catita was impressed by the steady immune parameters over the course of the six weeks. In most lung cancer radiotherapy patients, immune parameters decrease over the course of the treatment. Dr. Catita feels that Coriolus-MRL would have a beneficial application in chemotherapy patients as well, since chemotherapy also results in significant changes in blood cell levels and fatigue, which can reduce the possibility of the patient also receiving radiotherapy. In conclusion, Dr. Catita feels that these immune results are a curiosity, requiring further clinical investigation in the area of chemotherapy.

The Virus-Cancer Link *continued ...*

(1) **Dr. Kent Sepkowitz**, Virus and Cancer: Finding the Links - MD Infectious Diseases Society of America-37th Annual Meeting Day 3-November 20, 1999.

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(3) **Miller G, Risby MO, Heston L, et al.** Antibodies to butyrate-inducible antigens of Kaposi's sarcoma-associated herpes virus in patients with HIV-1 infection. N Engl J Med. 1996;334(20):1292-1297.

(4) **Koutski L.** Papilloma virus and human cancers. Presented at the 37th Annual Meeting of the Infectious Diseases Society of America; Philadelphia, Pa; November 18-21, 1999. Session 61, S101.

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(7) **Richardson** * Is breast cancer caused by late exposure to a common virus? Med Hypotheses 1997;48:491-7.

(8) **Sasco Aj, Lownfels AB, Pasker-de Jong P.** Epidemiology of male breast cancer. A meta-analysis of pbulised case-contolded studies and discussion of selected aetiological factors. Int J Cancer 1993;53:538-49.

(9) **Abhyankar SH, Chiang KY, Mc Guirk JP, Pati AR, Godder KT, Welsh JÁ et al.** Late onset Epstein-Bar virus-associated lymphonproliferative disease after allogeneic bone marrow transplant presenting as breast masses. Bone Marrow Transplant.

(10) **Koulibaly M Diallo SB, Wann AR, Diallo MB, Charlotte F, Le Chrbreast** localized in the breast (letter) Ann Pathol 1998;18:237-8.

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(12) **Bonnet M, Guinebretiere JM Kremmer E, Grunewald V, Benhamou E, Contesso G, Joab I-**"Detection of Epstein-Barr Virus in Invas Breast Cancers"- Journal of the National Cancer Institutes, Vol 91, No. 16, August 18, 1999.

Suggested Reading:

(1) **Miller G.** The switch between latency and replication of Epstein-Barr virus. J Infect Dis. 1990; 161 (5): 833-844

(2) **Wang F, Seldin DC, Annis B, Trocha A, Johnson RP.** Immune modulation of hum B lymphocytes by gene transfer with recombinant Epstein-Barr virus amplicons. J Virol Methods. 1998;72 (1):81-93.

(3) **Tindall J, Clegg E.** "The Effectiveness of Coriolus versicolor Supplementation in the Treatment of Kaposi's sarcoma in HIV+ Patients" Poster 8.16-Submitted to the 10th International Congress of Mucosal Immunology, June 27-July 1st, 1999. Amsterdam, the Netherlands (available under R&D section <http://www.mycologyresearch.com>)



Coriolus versicolour growing in the wild

Classification in TCM - Giovanni Maciocia

In TCM herbs are classified according to taste, energy and (acupuncture) channel entered. According to this classification the main medicinal mushrooms are seen as having the following properties and actions:

Ganoderma lucidium - Reishi Ling Zhi

Taste: Sweet
Energy: Warm
Channel: Stomach, Spleen, Lungs, Heart
Action: Tonify Qi, nourish Blood, calm the Mind
Indications: Tiredness, poor appetite, insomnia, dizziness

Letinula edodes - Shiitake - Xiang Gu

Taste: Sweet
Energy: Neutral
Channel: Stomach, spleen and Lungs
Action: Tonify Qi and Blood
Indications: Tiredness, dizziness, chronic cough, allergies, frequent colds

Coriolus versicolor - Kawaratake - Yun Zhi

Taste: Sweet
Energy: Slightly Warm
Channel: Spleen and Heart
Action: Tonify the spleen, resolve dampness & Phlegm, nourish the Mind
Indications: Lung Disorders, tiredness, chronic diseases

Cordyceps sinensis - Tochukas - Dong Chong Xia Cao

Taste: Sweet
Energy: Warm
Channel: Lungs, Kidneys
Action: Nourish Lung-Yin, tonify Kidney Yang, tonify Yang, resolve Phlegm, stop bleeding
Indications: Impotence, backache, chronic cough, wheezing

Giovanni Maciocia (C.Ac. (Nanjing)) is a leading lecturer on TCM and the author of four text books on TCM: "Tongue diagnosis in Chinese Medicine" (1987), "The Foundations of Chinese Medicine" (1989), "The Practice of Chinese Medicine" (1977) and "Obstetrics and Gynaecology in Chinese Medicine" (1997).
For information on forthcoming lectures by Mr. Maciocia please see his website at <http://www.ambrit.co.uk/giovanni-maciocia>.

3d Annual Symposium on Mushroom Nutrition-March 10th, 2001

Mycology Research Laboratories Ltd. in conjunction with both the Milan-based TCM School MediCina and SIFET (Società Italiana Farmacologia Cinese e Tradizionale) will co-sponsor the 3rd Annual Symposium on Mushroom Nutrition in Milan Italy on March 10th, 2001.

The 3rd Symposium will be entitled "Clinical Use of Mushroom Nutrition in Reducing Fatigue in Chronic Fatigue Syndromes".

The 3rd Symposium will present the clinical use of various types of mushroom nutrition in decreasing the fatigue states of patients with either CFS, Hepatitis C or HIV+ virus. The presentations will outline the impact of mushroom nutrition on such immune parameters as CD4 count, viral load and White Blood Cell (WBC) count.

The symposium will commence at 14:00 am on Saturday, March 10th 2001 at the Centro Congresso Stelline located on Corso Magenta 61, Milano, Italy. Interested parties are requested to contact Mr. David Blow (Fax:39-06-904-9953) to register for admission (free) with seating limited to 300 attendees. For more information please contact: www.mycologyresearch.com

Photo: Malcolm Clark, one of the speakers at the 3rd Symposium of Mushroom Nutrition, in Nepal to collect authentic Cordyceps sinensis for cultivation.



Where Can I Find More Information on Mushrooms?

1. Medicinal Mushrooms, An Exploration of Tradition, Healing & Culture by Christopher Hobbs, (L.Ac., A.H.G.) - Interweave Press Inc. This book is available from MRL distributors or contact Christopher Hobbs at www.christopherhobbs.com



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