NATURAL CANCER REPORTS

LIVE LONGER

BETA-GLUCAN

Natural Cancer Treatment Research Summary

ABSTRACT

Beta-glucan supports your immune system in all stages of treatment and prevention.

Beta-glucan

Natural Cancer Treatment Research Summary

Forward

The information and contents of www.NaturalCancerReports.com and this special report are based upon scientific, medical, university and health industry research from laboratory, animal and human studies. This information is provided for educational purposes and is intended complement and does not replace the healthcare advice and relationship received from a physician or qualified healthcare professional.

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While www.NaturalCancerReports.com makes every reasonable attempt to conduct a thorough search of the published medical literature, the possibility always exists that some significant articles may be missed.

In summary, you should consult with your doctor or healthcare provider before making any changes in your health and cancer treatment program. It may be helpful to give this report to your doctors when requesting a change in your cancer treatment program.

I've left some of the scientific and medical terms in this report for your doctors. I'm sorry that they are difficult to understand. In some cases, I've included a link to www.naturalcancerreports.com/Cancer-Terminology.html for an explanation of these words.

The scientific medical research with Beta-glucan and cancer is extensive so often the number references are limited to one per statement in the interest to save space.

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Beta-glucan

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The World Journal of Clinical Oncology (cancer science) believes Beta-glucan may be the most important natural immunomodulator (immune system stimulant).[103]

Beta-Glucan is also known as β-glucan, beta glucan, and beta 1,3/1,6 glucan. Beta-glucans are found in fungus, yeast, mushroom, grain and bacterial cells walls and when consumed by mammals initiate an immune response to fight a wide range of challenges including bacteria, viruses, fungi, and parasites.[8] Beta-glucans attach to several receptors including dectin-1 and complement[69] and activate a group of immune cells including granulocytes[76] macrophages, lymphocytes, T cells, neutrophils, monocytes, natural killer cells and dendritic cells so that they will digest, kill cells[1] and delay the progression of cancer.[18]

Beta-glucans can prevent the development of cancer by stimulating the immune system to remove cancer causing agents and activates dendritic, macrophage and NK cells to help inhibit tumor growth.[2] β-glucans are well-established immunomodulators with strong effects resulting in slowing or even inhibiting cancer growth.[35]

Beta-glucan given to patients with advanced breast cancer showed that tumor regression or significant symptomatic improvements were observed in 73% of breast cancer patients, 67% of lung cancer patients and 47% of liver cancer patients. When beta-glucan was given to the patients receiving chemotherapy, the response rates have improved from 12% to 28%. The clinical status of patients with breast, prostate, lung, and liver cancers was significantly improved with beta-glucan, while it was less effective on those patients with bone and stomach cancers or leukemias.[9] [10]

All types of cancer patients taking beta-glucan significantly reduced chemotherapy side effects. Beta-glucan may help support optimal immune system cells minimizing chemotherapy side effects. Nausea, hair loss, and low blood cell counts were alleviated in 90% of the patients taking Beta-glucan during chemotherapy. 83% of the patients also reported a reduction in pain.[9] In patients with colorectal cancer receiving FOLFOX-4 their white blood cell counts and platelet counts were better and mucositis and diarrhea is less common in the Beta-glucan treatment group.[41] Beta glucan improves the survival and quality of life in patient's with cancer receiving chemotherapy.[80]

A human trial in 30 women with breast cancer found oral beta-glucan supplement provided significant improvement in the quality of life compared to the women that took the placebo. These women were doing traditional medical breast cancer treatment and added the beta-glucan supplement.[3]

Oral beta-glucan is absorbed and effective in several cancer treatment studies.[72] [3] [73] [62]

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Beta-glucan has been studied successfully in scientific medical research for:

Abnormal PAPs (ASCUS & L-SIL) [34]

B Cell Lymphoma [98]

Bladder cancer [21]

Bone metastasis [29]

Breast cancer [22] [42]

Breast cancer mastectomy drain discharge [43]

Cervical cancer [27] [84] [94]

Chronic lymphocytic leukemia CLL [33]

Chronic myeloid leukemia CML [87]

Colon cancer [46]

Colon cancer prevention (ACF) [44]

Colorectal cancer [54]

Epidermoid carcinoma [23]

Esophageal carcinoma [50]

Fibrosarcoma [95]

Gastric cancer [40] [85]

Head and neck cancer [28] [83]

Hepatitis B virus [6]

HIV (human immunodeficiency virus) [93]

Hodgkin's lymphoma [62]

HPV (human papilloma virus) [5]

Liver Cancer [15] [16]

Leukemia [64]

Lewis Lung Carcinoma [4]

Lung cancer [13] [17]

Lymphoma [97]

Lymphosarcoma [65]

Melanoma [23] [101]

Neuroblastoma [78]

non-Hodgkin's lymphoma (NHL) [62]

Oral squamous cell carcinoma (OSCC) [52]

Osteosarcoma [101]

Ovarian cancer [68] [82]

Pancreatic cancer [38]

Prostate cancer [11] [79]

Renal cell carcinoma [74]

Squamous-cell carcinoma [99]

Stomach cancer [66]

Uterine cancer [88]

Yeast infections during cancer treatment [7]

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Beta-Glucan with Chemotherapy

The Department of Pathology at the University of Louisville states in the drug research journal Anticancer Agents in Medicinal Chemistry "*It is well established that glucans enhance the efficacy of anti-cancer and anti-infection immunotherapy, both in clinical and experimental conditions*."[47]

Perhaps the most promising evidence to date in human trials has come from medical studies on a benefit of β-glucan on the quality of life and survival when given in combination with chemotherapy cancer treatment [55] [57] [59] [81] [82] [86] **and radiation therapy**. [84] [92]

Beta-Glucan has been studied successfully in scientific medical research studies with the following chemotherapy drugs:

5-fluorouracil (5-FU, Adrucil ®)[27]

Dactinomycin (Actinomycin D®) [53]

Alemtuzumab (Campath®, MabCampath®) [33]

Anti-tumor monoclonal antibodies [49]

AC (Adriamycin + Cyclophosphamide) [39]

Alemtuzumab and rituximab [33]

Bevacizumab (Avastin®)[58]

Carmustine (BiCNU®) [79]

Cetuximab (Erbitux®) [31]

Cisplatin (Platinol®)[51]

Cisplatin + Gemcitabine [32] [19]

CMF (Cyclophosphamide + Methotrexate + Fluorouracil (5-FU)) [39]

Cyclophosphamide (Cytoxan®) [53]

Docetaxel (Taxotere®) + Cisplatin [45]

Doxorubicin (Adriamycin®) [53]

ECF (Epirubicin + Cisplatin + Fluorouracil (5-FU)) [39]

Gamma-globulin (IGG) [87]

Gemcitabine (Gemzar®) [36]

Interferon (IFN)[90]

Mitomycin C (Mutamycin®) [91]

Nivolumab (Opdivo®) [102]

Oxaliplatin (Eloxatin™)[16]

PAC (cisplatin, adriamycin and cyclophosphamide)[82]

Paclitaxel (Taxol®, Onxal™) [24]

Paclitaxel + Cisplatin [32]

Pembrolizumab (Keytruda®) [102]

Rituximab (Rituxan®) [33]

S-1 (tegafur/gimeracil/oteracil) [56]

Tegafur [80]

Trastuzumab (Herceptin®) [48]

TS-1 (titanium silicate)[71]

UFT (tegafur/uracil)[75]

Etoposide (Toposar®, VePesid®, Etopophos®) [96]

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Beta-glucan reduces chemotherapy-related toxicities including gastrointestinal reactions, granulocytopenia (low white blood granulocyte cells).[20]

Beta-Glucan with Immunotherapy Monoclonal Antibodies (mAb)

Beta-glucan improves the effectiveness of immunotherapy antibodies by initiating complement receptor 3 (CR3-DCC).[70] The James Graham Brown Cancer Center, Tumour Immunobiology Program, University of Louisville wrote "*Extensive studies in preclinical animal tumour models have demonstrated the efficacy of combined oral particulate yeast beta-glucan with antitumor mAb therapy in terms of tumour regression and long-term survival*."[72] [77] [78]

Beta-glucan with Radiation Therapy

An animal study of Beta-glucan with radiation therapy by reduced the primary tumor, decreased hair loss and less skin wounds compared to the control group that just received radiation therapy. The combination of beta-glucan with radiation therapy improved length of survival compared to control and radiation therapy only. [25]

In a study of mice with implanted Lewis lung carcinoma beta-glucan decreased the number of lung metastases and prolonged the life span of the mice regardless if they received radiation treatment or not. The addition of beta-glucan to radiation therapy increased both the macrophage infiltration and T-lymphocyte infiltration in the local tumour and the lung nodules. Beta-glucan treatment increased the suppression of tumour growth associated with radiation treatment.[26]

The 5-year survival of women with cervical cancer was significantly better when they added beta-glucan to their cancer treatment. Beta-glucan improved the effectiveness of radiation treatment and 5-fluorouracil treatment. [27]

52 hospitals in Japan compared the effectiveness of radiation treatment and radiation treatment with beta-glucan. The patients that did both radiation therapy and beta-glucan had significantly better complete tumor response compared to the patients that did only radiation treatment. The beta-glucan group showed a significantly rapid recovery from the decreased lymphocyte counts due to radiotherapy.[30]

A human study found Beta-glucan with radiofrequency ablation increased survival times, tumour necrosis and reduced the recurrence rate of liver cancer.[63]

Additional beta-glucan human cancer radiation therapy (radiotherapy) treatment references: [88] [89] [94] [84] [92] [99] [100]

Beta-glucan with Stem Cell Transplantation

Beta-glucan alone or in combination with granulocyte colony-stimulating factor (G-CSF) mobilizes hematopoietic progenitor cell (HPC) mobilization into the periphery parts of the body.[67]

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Potential False Positive Yeast Test

Even though some beta-glucan supplement sources come from fungus and yeast a high-quality product from a reputable dietary supplement manufacturer has been processed and cleaned and does not contain actual yeast or fungus. Notify your health care practitioner if you are taking a beta-glucan and your doctor suspects that you may have a yeast infection. It possible that a beta glucan dietary supplement may provide a positive blood test for b-D-glucan and your doctor may believe you have a yeast or fungal infection.[14]

Combining Beta-glucan with Supplements

A laboratory cell study by the Department of Pathology, University of Louisville, found the combination of beta-glucan, resveratrol and vitamin C strongly suppressed the growth of breast and lung tumors better than the individual supplements. The combination supplement caused cancer cell death better than either supplement by itself.[102]

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Beta-Glucan Quality & Potential Allergic Reactions

While each source of beta-glucan has its own unique structure of glucose linkages, purified yeast-derived betaglucan from S cerevisiae is considered the most effective source. [104] [105] Purity of the product is vital, since protein contaminants can cause untoward immune reactions. XYMOGEN's ImmunotiX is refined to remove most impurities, including proteins and fats that can interfere with uptake and effectiveness. Mannan, a potential trigger of allergic reactions or bowel exacerbation, has been removed.

In My Practice I Use:

ImmunotiX 250mg: 1 capsule 1-2 times daily. Best taken on an empty stomach, no closer than 1 hour prior or 2 hours after food.

You can learn more about beta-glucan and ImmunotiX at www.wholescripts.com.
Referral Code: NCS4ME
Practitioner Last Name: Bishop

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Natural Cancer Treatment Research Summary

Scientific Medical Reference Sources

[1] The effects of β-glucan on human immune and cancer cells. Godfrey Chi-Fung Chan, Wing Keung Chan, Daniel Man-Yuen Sze. Journal of Hematology Oncology. 2009; 2: 25.
[2] Effects of beta-glucans on the immune system. Akramiene D1, Kondrotas A, et al. Medicina (Kaunas). 2007;43(8):597-606.
[3] Effect of β-glucan on quality of life in women with breast cancer undergoing chemotherapy: A randomized double-blind placebo-controlled clinical trial. Ostadrahimi A., Esfahani A., et al. Adv. Pharm. Bull. 2014;4:471–477
[4] Mushroom β-Glucan May Immunomodulate the Tumor-Associated Macrophages in the Lewis Lung Carcinoma. Wan-Jhen Wang, Yu-Sheng Wu, et al. Biomed Res Int. 2015; 2015: 604385.
[5] Effectiveness of the treatment with beta-glucan in the HPV-CIN 1 lesions. Scardamaglia P, Carraro C, et al. Minerva Ginecol. 2010 Oct;62(5):389-93
[6] beta-Glucan oligosaccharide enhances CD8(+) T cells immune response induced by a DNA vaccine encoding hepatitis B virus core antigen. Wang J, Dong S, et al. J Biomed Biotechnol. 2010;2010:645213.
[7] Role of beta-glucan in the treatment of recurrent candidiasis and HPV-correlated lesions and reparative process of epidermis. Pietrantoni E, Signore F, et al. Minerva Ginecol. 2010 Feb;62(1):1-5.
[8] The biological activity of beta-glucans. Rondanelli M, Opizzi A, Monteferrario F. Minerva Med. 2009 Jun;100(3):237-45.
[9] Nanba H. Maitake D-fraction: healing and preventive potential for cancer. J Orthomol Med. 1997;12:43–49.
[10] Nanba H. Maitake D-fraction: healing and preventive potential for cancer. J Orthomol Med. 1997;12:43–49.
[11] Konno S. Maitake D-fraction: a potent mushroom extract product against human malignancies. Townsend Lett. 2002;233:96–100.
[12] Konno S. Maitake D-fraction: a potent mushroom extract product against human malignancies. Townsend Lett. 2002;233:96–100.
[13] High- and low-Molecular Weight oat Beta-Glucan Reveals Antitumor Activity in Human Epithelial Lung Cancer. Choromanska A, Kulbacka J, et al. Pathol Oncol Res. 2017 Jul 29.
[14] False-positive serum (1, 3)-β-D-glucan elevation due to intake of seaweed in a hematopoietic stem cell transplant recipient. Hashimoto N, Mori T, Hashida R, et al. Transpl Infect Dis. 2017 Apr;19(2)
[15] In Vitro Proinflammatory Polarization of Macrophages Isolated from Hepatocarcinogenic Stage in Humans and Rats. Wójcik M, Wessely-Szponder J, et al. In Vivo. 2016 11-12;30(6):853-862.
[16] Polysaccharide from Lentinus edodes combined with oxaliplatin possesses the synergy and attenuation effect in hepatocellular carcinoma. Zhang Y, Li Q, et al. Cancer Lett. 2016 Jul 28;377(2):117-25.
[17] Optimal sequence of antisense DNA to silence YB-1 in lung cancer by use of a novel polysaccharide drug delivery system. Izumi H, Nagao S, et al. Int J Oncol. 2016 Jun;48(6):2472-8.
[18] β-glucan restores tumor-educated dendritic cell maturation to enhance antitumor immune responses. Ning Y, Xu D, et al. International Journal of Cancer. 2016 Jun 1;138(11):2713-23
[19] Rongfang J, Xiaoming T, et al. Clincial effect of lentinan combined with gemcitabine and cisplatin in the treatment of non-small cell lung cancer. Med J Qilu 2010;8:132-4
[20] A meta-analysis of lentinan injection combined with chemotherapy in the treatment of nonsmall cell lung cancer. Yin X, Ying J, et al. Indian J Cancer. 2015 Nov;52 Suppl 1:e29-31
[21] Apoptosis-inducing effects of lentinan on the proliferation of human bladder cancer T24 cells. Bao L, Wang Y, et al. Pak J Pharm Sci. 2015 Sep;28(5):1595-600.
[22] Antiproliferative and pro-apoptotic effects of three fungal exocellular β-glucans in MCF-7 breast cancer cells is mediated by oxidative stress, AMP-activated protein kinase (AMPK) and the Forkhead transcription factor, FOXO3a. Queiroz EA, Fortes ZB, et al. Int J Biochem Cell Biol. 2015 Oct;67:14-24.
[23] Anticancer properties of low molecular weight oat beta-glucan – An in vitro study. Choromanska A, Kulbacka J, et al. Int J Biol Macromol. 2015 Sep;80:23-8
[24] Lentinan exerts synergistic apoptotic effects with paclitaxel in A549 cells via activating ROS-TXNIP-NLRP3 inflammasome. Liu W, Gu J, et al. J Cell Mol Med. 2015 Aug;19(8):1949-55
[25] The Effect of Mushroom Beta-Glucans from Solid Culture of Ganoderma lucidum on Inhibition of the Primary Tumor Metastasis. Chen SN, Chang CS, et al. Evid Based Complement Alternat Med. 2014;2014:252171
[26] Immune reaction induced by X-rays and pions and its stimulation by schizophyllan (SPG). Inomata T, Goodman GB, et al. Br J Cancer Suppl. 1996 Jul;27:S122-5.
[27] Activated (HLA-DR+) T-lymphocyte subsets in cervical carcinoma and effects of radiotherapy and immunotherapy with sizofiran on cell-mediated immunity and survival. Miyazaki K, Mizutani H, et al. Gynecol Oncol. 1995 Mar;56(3):412-20.
[28] Clinical evaluation of sizofilan as assistant immunotherapy in treatment of head and neck cancer. Kimura Y, Tojima H, Fukase S, Takeda K. Acta Otolaryngol Suppl. 1994;511:192-5.
[29] [Two cases of cancer with bone metastases treated with local therapy]. Kurokawa T, Tamakuma S. Gan To Kagaku Ryoho. 1993 Aug;20(11):1717-9.
[30] Clinical effect of sizofiran combined with irradiation in cervical cancer patients: a randomized controlled study. Cooperative Study Group on SPG for Gynecological Cancer. Noda K, Takeuchi S, Yajima A, et al. Jpn J Clin Oncol. 1992 Feb;22(1):17-25.
[31] A Phase II Efficacy and Safety, Open-Label, Multicenter Study of Imprime PGG Injection in Combination With Cetuximab in Patients With Stage IV KRAS-Mutant Colorectal Cancer. Segal NH, Gada P, et al. Clin Colorectal Cancer. 2016 Sep;15(3):222-7.
[32] A meta-analysis of lentinan injection combined with chemotherapy in the treatment of nonsmall cell lung cancer. Yin X, Ying J, Li L, Zhang H, Wang H. Indian J Cancer. 2015 Nov;52 Suppl 1:e29-31
[33] Early treatment of high risk chronic lymphocytic leukemia with alemtuzumab, rituximab and poly-(1-6)-beta-glucotriosyl-(1-3)- beta-glucopyranose beta-glucan is well tolerated and achieves high complete remission rates. Zent CS, Call TG, et al. Leuk Lymphoma. 2015;56(8):2373-8.
[34] Effect of the treatment with β-glucan in women with cervical cytologic report of atypical squamous cells of undetermined significance (ASCUS) and low-grade squamous intraepithelial lesions (L-SIL). Laccetta G, Carrone A, et al. Minerva Ginecol. 2015 Apr;67(2):113-20.
[35] Evaluation of a special combination of glucan with organic selenium derivative in different murine tumor models. Vetvicka V, Pinatto-Botelho MF, et al. Anticancer Res. 2014 Dec;34(12):6939-44.
[36] Lentinan reduces tumor progression by enhancing gemcitabine chemotherapy in urothelial bladder cancer. Sun M, Zhao W, Xie Q, Zhan Y, Wu B. Surg Oncol. 2015 Mar;24(1):28-34.
[37] [Evaluation of immunity in elderly patients with unresectable gastric cancer receiving S-1/Lentinan combination chemotherapy]. Fukuchi M, Mochiki E, et al. Gan To Kagaku Ryoho. 2014 Oct;41(10):1264-6.
[38] Anticancer effects on human pancreatic cancer cells of triterpenoids, polysaccharides and 1,3-β-D-glucan derived from the fruiting body of Antrodia camphorata. Lee CI, Wu CC, et al. Food Funct. 2014 Dec;5(12):3224-32.

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[39] Effect of beta glucan on white blood cell counts and serum levels of IL-4 and IL-12 in women with breast cancer undergoing chemotherapy: a randomized double-blind placebo-controlled clinical trial. Ostadrahimi A, Ziaei JE, et al. Asian Pac J Cancer Prev. 2014;15(14):5733-9.
[40] [Evaluation of immunity in elderly patients with unresectable gastric cancer receiving S-1/Lentinan combination chemotherapy]. Fukuchi M, Mochiki E, et al. Gan To Kagaku Ryoho. 2014 Oct;41(10):1264-6.
[41] Positive effects of oral β-glucan on mucositis and leukopenia in colorectal cancer patients receiving adjuvant FOLFOX-4 combination chemotherapy. Karaca H, Bozkurt O, et al. Asian Pac J Cancer Prev. 2014;15(8):3641-4.
[42] β-D-glucan inhibits endocrine-resistant breast cancer cell proliferation and alters gene expression. Jafaar ZM, Litchfield LM, et al. Int J Oncol. 2014 Apr;44(4):1365-75
[43] Effect of β-glucan on drain fluid and amount of drainage following modified radical mastectomy. Yenidogan E, Akgul GG, et al. Adv Ther. 2014 Jan;31(1):130-9.
[44] Antitumor activity of the β-glucan paramylon from Euglena against preneoplastic colonic aberrant crypt foci in mice. Watanabe T, Shimada R, et al. Food Funct. 2013 Nov;4(11):1685-90.
[45] Effect of lentinan combined with docetaxel and cisplatin on the proliferation and apoptosis of BGC823 cells. Zhao L, Xiao Y, Xiao N. Tumour Biol. 2013 Jun;34(3):1531-6.
[46] The application of fungal β-glucans for the treatment of colon cancer. Chen J, Zhang XD, Jiang Z. Anticancer Agents Med Chem. 2013 Jun;13(5):725-30.
[47] Synthetic oligosacharides--clinical application in cancer therapy. Vetvicka V. Anticancer Agents Med Chem. 2013 Jun;13(5):720-4.
[48] The use of lentinan for treating gastric cancer. Ina K, Kataoka T, Ando T. Anticancer Agents Med Chem. 2013 Jun;13(5):681-8
[49] Anti-tumor monoclonal antibodies in conjunction with β-glucans: a novel anti-cancer immunotherapy. Xiang D, Sharma VR, et al. Curr Med Chem. 2012;19(25):4298-305
[50] Combination therapy with lentinan improves outcomes in patients with esophageal carcinoma. Wang JL, Bi Z, et al. Mol Med Rep. 2012 Mar;5(3):745-8.
[51] [Combination chemotherapy of S-1/low-dose CDDP/lentinan for advanced gastric cancer]. Hori T, Ikehara T, et al. Gan To Kagaku Ryoho. 2011 Feb;38(2):293-5.
[52] Effects of lentinan alone and in combination with fluoropyrimidine anticancer agent on growth of human oral squamous cell carcinoma in vitro and in vivo. Harada K, Itashiki Y, et al. Int J Oncol. 2010 Sep;37(3):623-31.
[53] Curdlan derivatives able to enhance cytostatic drugs activity on tumor cells. Bădulescu MM, Apetrei NS, et al. Roum Arch Microbiol Immunol. 2009 Oct-Dec;68(4):201-6.
[54] [Provision for adverse effect of S-1 containing chemotherapy in patients with advanced digestive cancer--combination with superfine dispersed lentinan]. Yagi M, Watanabe S, et al. Gan To Kagaku Ryoho. 2010 Mar;37(3):457-62.
[55] Immune modulating effects of β-glucan. Murphy EA, Davis JM, Carmichael MD. Curr Opin Clin Nutr Metab Care. 2010 Nov;13(6):656-61.
[56] [A case of advanced gastric cancer with distant lymph node metastases in cervical, supraclavicular and superior mediastinum successfully treated with S-1/Cisplatin (CDDP)/Lentinan combination chemotherapy]. Kinoshita K, Kondo K, Watanabe K. Gan To Kagaku Ryoho. 2010 Apr;37(4):707-10.
[57] Lentinan with S-1 and paclitaxel for gastric cancer chemotherapy improve patient quality of life. Kataoka H, Shimura T, et al. Hepatogastroenterology. 2009 Mar-Apr;56(90):547-50.
[58] Effect of yeast-derived beta-glucan in conjunction with bevacizumab for the treatment of human lung adenocarcinoma in subcutaneous and orthotopic xenograft models. Zhong W, Hansen R, et al. J Immunother. 2009 Sep;32(7):703-12.
[59] Efficacy of orally administered superfine dispersed lentinan (beta-1,3-glucan) for the treatment of advanced colorectal cancer. Hazama S, Watanabe S, et al. Anticancer Res. 2009 Jul;29(7):2611-7.
[60] Synergistic potentiation of D-fraction with vitamin C as possible alternative approach for cancer therapy. Konno S. Int J Gen Med. 2009 Jul 30;2:91-108.
[61] The role of complement in the mechanism of action of rituximab for B-cell lymphoma: implications for therapy. Zhou X, Hu W, Qin X. Oncologist. 2008 Sep;13(9):954-66.
[62] Rituximab therapy of lymphoma is enhanced by orally administered (1-->3),(1-->4)-D-beta-glucan. Modak S, Koehne G, et al. Leuk Res. 2005 Jun;29(6):679-83.
[63] Clinical application of a combination therapy of lentinan, multi-electrode RFA and TACE in HCC. Yang P, Liang M, et al. Adv Ther. 2008 Aug;25(8):787-94.
[64] Ganoderma lucidum polysaccharides can induce human monocytic leukemia cells into dendritic cells with immuno-stimulatory function. Chan WK, Cheung CC, et al. J Hematol Oncol. 2008 Jul 21;1:9.
[65] Yeast cell wall polysaccharides as antioxidants and antimutagens: can they fight cancer? Kogan G, Pajtinka M, et al. Neoplasma. 2008;55(5):387-93.
[66] [Case of gastric cancer with recurrence of carcinomatous lymphangiosis of the lung 7.6 years after surgery and successfully treated with S-1/low-dose CDDP/Lentinan combination therapy]. Matsusaki K, Hirose N, et al. Gan To Kagaku Ryoho. 2008 Jun;35(6):995-7.
[67] Mobilization of hematopoietic progenitor cells by yeast-derived beta-glucan requires activation of matrix metalloproteinase-9. Cramer DE, Wagner S, et al. Stem Cells. 2008 May;26(5):1231-40.
[68] Combined yeast {beta}-glucan and antitumor monoclonal antibody therapy requires C5a-mediated neutrophil chemotaxis via regulation of decay-accelerating factor CD55. Li B, Allendorf DJ, Hansen R, et al. Cancer Res. 2007 Aug 1;67(15):7421-30.
[69] Medicinal importance of fungal beta-(1-->3), (1-->6)-glucans. Chen J, Seviour R. Mycol Res. 2007 Jun;111(Pt 6):635-52.
[70] Cross-linking tumor cells with effector cells via CD55 with a bispecific mAb induces beta-glucan-dependent CR3-dependent cellular cytotoxicity. Gelderman KA, Lam S, et al. Eur J Immunol. 2006 Apr;36(4):977-84.
[71] [Anticancer immunotherapy with perorally effective lentinan]. Hamuro J. Gan To Kagaku Ryoho. 2005 Aug;32(8):1209-15.
[72] Yeast whole glucan particle (WGP) beta-glucan in conjunction with antitumour monoclonal antibodies to treat cancer. Yan J, Allendorf DJ, Brandley B. Expert Opin Biol Ther. 2005 May;5(5):691-702.
[73] Suppressing effects of daily oral supplementation of beta-glucan extracted from Agaricus blazei Murill on spontaneous and peritoneal disseminated metastasis in mouse model. Kobayashi H, Yoshida R, et al. J Cancer Res Clin Oncol. 2005 Aug;131(8):527-38.
[74] Beta-glucan enhanced killing of renal cell carcinoma micrometastases by monoclonal antibody G250 directed complement activation. Sier CF, Gelderman KA, et al. Int J Cancer. 2004 May 10;109(6):900-8.
[75] [A case of long survival with UFT and lentinan treatment in a patient with peritoneal metastasis of gastric carcinoma]. Nakayama H, Aoki N, et al. Gan To Kagaku Ryoho. 2004 Feb;31(2):241-3.
[76] Beta-glucan functions as an adjuvant for monoclonal antibody immunotherapy by recruiting tumoricidal granulocytes as killer cells. Hong F, Hansen RD, et al. Cancer Res. 2003 Dec 15;63(24):9023-31.

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Beta-glucan

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[77] Orally administered beta-glucans enhance anti-tumor effects of monoclonal antibodies. Cheung NK, Modak S, et al. Cancer Immunol Immunother. 2002 Nov;51(10):557-64.
[78] Oral (1-->3),(1-->4)-beta-D-glucan synergizes with antiganglioside GD2 monoclonal antibody 3F8 in the therapy of neuroblastoma. Cheung NK, Modak S. Clin Cancer Res. 2002 May;8(5):1217-23.
[79] Induction of apoptosis in human prostatic cancer cells with beta-glucan (Maitake mushroom polysaccharide). Fullerton SA, Samadi AA, et al. Mol Urol. 2000 Spring;4(1):7-13.
[80] A multi-institutional prospective study of lentinan in advanced gastric cancer patients with unresectable and recurrent diseases: effect on prolongation of survival and improvement of quality of life. Kanagawa Lentinan Research Group. Nakano H, Namatame K, et al. Hepatogastroenterology. 1999 Jul-Aug;46(28):2662-8.
[81] Lentinan potentiates immunity and prolongs the survival time of some patients. Matsuoka H, Seo Y, et al. Anticancer Res. 1997 Jul-Aug;17(4A):2751-5.
[82] Improvement of long-term prognosis in patients with ovarian cancers by adjuvant sizofiran immunotherapy: a prospective randomized controlled study. Inoue M, Tanaka Y, et al. Biotherapy. 1993;6(1):13-8.
[83] Clinical evaluation of sizofilan as assistant immunotherapy in treatment of head and neck cancer. Kimura Y, Tojima H, et al. Acta Otolaryngol Suppl. 1994;511:192-5.
[84] Antitumor activity of Langerhans cells in radiation therapy for cervical cancer and its modulation with SPG administration. Nakano T, Oka K, et al. In Vivo. 1993 May-Jun;7(3):257-63.
[85] Enhanced production of interleukin 1 and tumor necrosis factor by peripheral monocytes after lentinan administration in patients with gastric carcinoma. Arinaga S, Karimine N, et al. Int J Immunopharmacol. 1992 Jan;14(1):43-7.
[86] Interferon-alpha, interferon-gamma and sizofiran in the adjuvant therapy in ovarian cancer--a preliminary trial. Chen JT, Hasumi K, Masubuchi K. Biotherapy. 1992;5(4):275-80.
[87] [Use of the stimulants of nonspecific resistance in the complex treatment of infectious complications in patients with chronic myeloid leukemia]. Guseva SA. Gematol Transfuziol. 1991 Aug;36(8):21-3.
[88] [The study on the immunological effect of sizofilan combined with radiotherapy in patients with uterine cervical cancer]. Sekiguchi I, Suzuki M, et al. Nihon Gan Chiryo Gakkai Shi. 1990 Nov 20;25(11):2659-64.
[89] [Electron microscopic and immunological studies concerning the effect on the antitumor activity of sizofiran (SPG) combined with radiotherapy for cervical cancer]. Hasegawa K, Nishimura R, et al. Nihon Gan Chiryo Gakkai Shi. 1990 Oct 20;25(10):2549-61.
[90] [Effect of sizofiran or recombinant interferon gamma on the activation of human peritoneal macrophage function; an approach for the prophylaxis of intraperitoneal recurrence of ovarian cancer]. Chen JT, Teshima H, et al. Nihon Sanka Fujinka Gakkai Zasshi. 1990 Feb;42(2):179-84.
[91] [An advanced gastric carcinoma which responded to combined administration of mitomycin C, FT-207, and lentinan immunochemotherapy]. Sano T, Nomura K, et al. Gan No Rinsho. 1990 Jan;36(1):97-100.
[92] Clinical evaluation of sizofiran combined with irradiation in patients with cervical cancer. A randomized controlled study; a five-year survival rate. Okamura K, Suzuki M, et al. Biotherapy. 1989;1(2):103-7.
[93] Suppression of human immunodeficiency virus replication by 3'-azido-3'-deoxythymidine in various human hematopoietic cell lines in vitro: augmentation of the effect by lentinan. Tochikura TS, Nakashima H, et al. Jpn J Cancer Res. 1987 Jun;78(6):583-9.
[94] Clinical evaluation of schizophyllan combined with irradiation in patients with cervical cancer. A randomized controlled study. Okamura K, Suzuki M, et al. Cancer. 1986 Aug 15;58(4):865-72.
[95] [Experimental studies on growth inhibition and regression of cancer metastases]. Chihara G. Gan To Kagaku Ryoho. 1985 Jun;12(6):1196-209.
[96] [A case of advanced gastric cancer with multiple liver metastasis successfully treated with combination chemotherapy using UFT, CDDP and etoposide]. Ono T, Komatsu M, et al. Gan To Kagaku Ryoho. 1996 Oct;23(12):1709-12.
[97] Antimicrobial Properties and Cytotoxicity of Sulfated (1,3)-β-D-Glucan from the Mycelium of the Mushroom Ganoderma lucidum. Wan-Mohtar WA, Young L, et al. J Microbiol Biotechnol. 2016 Jun 28;26(6):999-1010.
[98] Oral administration of a soluble 1-3, 1-6 beta-glucan during prophylactic survivin peptide vaccination diminishes growth of a B cell lymphoma in mice. Harnack U, Eckert K,et al. Int Immunopharmacol. 2009 Oct;9(11):1298-303.
[99] Combination therapy of radiation and Sizofiran (SPG) on the tumor growth and metastasis on squamous-cell carcinoma NR-S1 in syngeneic C3H/He mice. Arika T, Amemiya K, Nomoto K. Biotherapy. 1992;4(2):165-70.
[100] [Combination therapy of radiation and schizophyllan (SPG) in C3H mouse squamous-cell carcinoma NR-S1]. Arika T, Amemiya K, Mochizuki S. Gan To Kagaku Ryoho. 1986 Sep;13(9):2841-7.
[101] Systemic administration of β-glucan of 200 kDa modulates melanoma microenvironment and suppresses metastatic cancer. Zhang M, Chun L, Sandoval V, et al. Oncoimmunology. 2017 Oct 30;7(2):e1387347.
[102] Combination of glucan, resveratrol and vitamin C demonstrates strong anti-tumor potential. Vetvicka V, Vetvickova J. Anticancer Res. 2012 Jan;32(1):81-7.
[103] Glucan-immunostimulant, adjuvant, potential drug. Vetvicka V. World J Clin Oncol. 2011 Feb 10;2(2):115-9.
[104] Vetvicka V, Terayama K, Mandeville R, et al. Pilot study: orally-administered yeast ß1,3-glucan prophylactically protects against anthrax infection and cancer in mice. JANA. 2002;5(2):5-9.
[105] Natural Standard Database http://naturalstandard.com. Accessed July 23, 2011.

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