

What is BioBran? – Characteristics of BioBran –

BIOBRAN

- BioBran, original food material of Daiwa Pharmaceutical Co., Ltd, is obtained from rice bran arabinoxylan by using enzymes extracted from shiitake mushrooms to reduce the molecular weight of the arabinoxylan, facilitating absorption into the body. ※
- The main component is a rice bran Arabinoxylan derivative.
- Easy to dissolve in water and is stable to processing in high temperature.
- Accumulating scientific data over ten years.
- Have exported BioBran products to 30 countries.



※Process Patent: Japan No.3519197, U.S.A. No.5560914, UK, France, Spain, Italy, Germany, and Portugal No.753592, South Korea No.0344755

【Doses】

*Standard adult dosage: 300mg/day
 *Recommended dosage of 1 ~ 3g/day for health maintenance

【Safety】

*Mutagenicity (Ames test) Negative
 *Acute toxicity LD50>36g/ k g

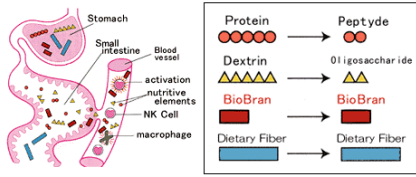
【Efficacy studies】

Efficacy studies UCLA / DREW University, Cambridge University, McMaster university, Groningen university, Tokyo Medical and Dental University, Chiba University, Kobe Women's College, Jichi Medical School, Nihon University, Kyushu University, Nagoya University, Kyoto University, Toyama Medical and Pharmaceutical University, Kawasaki Medical University, etc.

Function of BioBran

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BioBran enters the blood undigested. Proteins are digested in the stomach and in the duodenum, to be transformed into peptide and amino acids, which are then absorbed in the small intestine, entering the blood to become nutritive elements. Dextrin is also digested into oligosaccharide and dextrose (glucose) and absorbed in the small intestine. BioBran is absorbed in the small intestine in undigested form and enters the blood to stimulate NK cells and macrophages.



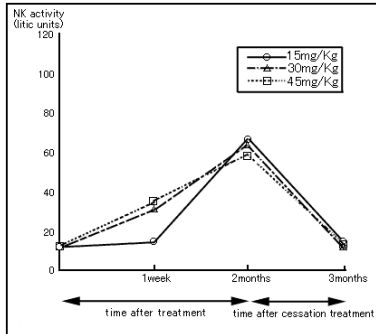
Scientific data of BioBran

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BioBran has the effect of enhancing the activities of natural immune cells such as NK cells. Enhanced NK cell activity, which is particularly important in ameliorating the effects of aging, stress and environmental pollutants, results in immunopotentiality. The following literature citations describe work on the relationship between dosage and period of administration on the activation of NK cells, a study of the activation of NK cells in patients with different types of cancers, and a result of research on the activation of lymphocytes including T cells and B cells.

Ghoneum M, Drew University. "Enhancement of human natural killer cell activity by modified Arabinosylan from rice bran (MGN-3)" INT.IMMUNOTHERAPY XIV (2) 89-99,1998

1) The relationship between dosage and period of dosage on human NK cell activity against K562 tumor cells



Methods:

Subjects were divided into three groups of eight individuals each, then orally administered MGN-3 over a period of two months. Group 1, group 2, and group 3 received MGN-3 in doses of 15 mg/kg/day, 30 mg/kg/day, and 45 mg/kg/day, respectively. The study results were then analyzed statistically.

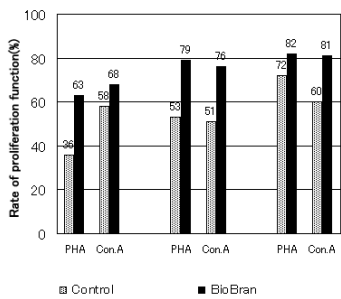
Results:

MGN-3 at a dosage of 15 mg/kg/day showed no changes at one week, compared to baseline values. However, a two-fold increase in NK cytotoxicity was detected after one month of treatment. Increased dosage to 30 mg/kg/day resulted in significant enhancement of NK activity (310% over baseline), which was detected as early as one week. Peak response was observed at the end of the treatment period (two months), when NK activity had increased fivefold. Increasing dosage to 45 mg/kg/day demonstrated similar positive trends in NK activity, but the values were higher than those for dosage of 30 mg/kg/day. Discontinuation of treatment resulted in declining NK activity, with NK activity returning to baseline levels within one month.

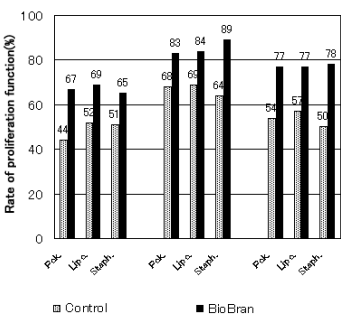
2) The relationship between cancer cells and NK cell activity on binding ability.

By comparing the proliferation activity of T and B lymphocytes in three individuals before and after BioBran medication, the proliferation of both T cells and B cells was found to be increased in all three after BioBran administration.

Effect of BioBran on T cell proliferation in vivo

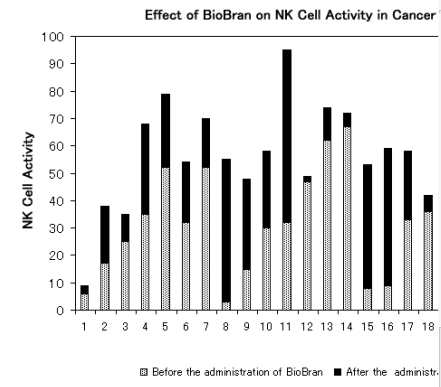


Effect of BioBran on B cell proliferation in vivo



The immunomodulatory action of BioBran was examined in 25 cancer patients with different types of advanced malignancies undergoing treatment with

with various types of advanced malignancies undergoing treatment with conventional therapy. As a result of comparing their NK cell activity before and after the 6-month administration of BioBran, all participants experienced a boost in NK cell activity after the administration.



		Sanada H. (Department of Bioresources Chemistry, Chiba University) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
	Oct.	"MGN-3 potentiates death receptor-induced apoptosis in cancer cells" 93 rd Annual Meeting 2003 of American Association for Cancer Research, Boston Ghoneum M. (UCLA/Drew University) and S. Gollapudi (University of California Irvine)
	Oct.	"Normalization of the Lymphocyte System in Peripheral Blood Reaction by Arabinosyloxan from Rice Bran (MGN-3)" 43 rd Annual Meeting, American College of Nutrition, San Antonio, Texas Ueda Y., Masada M. (Department of Bioresources Chemistry, Chiba University), and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
	Mar.	"The effect of modified rice-bran arabinosyloxan on NK activity of human peripheral blood lymphocytes" 46 th Japan Society for Bioscience, Biotechnology and Agrochemistry, Sendai Shimomura C. (Graduate School of Science and Technology, Chiba University), Ueda Y., Kodama H., Masada M. (Department of Bioresources Chemistry, Chiba University) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
	Mar.	"Study on the growth inhibiting component of cancerous cells in culture cell lines derived from modified rice-bran arabinosyloxan" 46 th Japan Society for Bioscience, Biotechnology, and Agrochemistry, Sendai Miyazaki F. (Graduate School of Science and Technology, Chiba University), Hashizume T. (Technology Department, Kazami Co., Ltd), Kodama H., Masada M. (Department of Bioresources Chemistry, Chiba University) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
2001	Nov.	"A Descriptive Questionnaire-Based Study on the Use of BioBran (MGN3) in Chronic Fatigue Syndrome" TOWNSEND LETTER for Doctors & Patients, No.220, November 2001 J. Kenyon
	Aug.	"Application of the Novel Physiological Substance Rice Arabinosyloxan Derivative (MGN-3, BioBran) to Alternative Medicine" The Journal of Japan Mibyou System Association, Vol.7 No.1 Hiroaki Maeda
	Jul.	"Inhibitory effect of MGN-3 on the progress of atopic dermatitis in NC mice" 11 th International Congress of Immunology, Stockholm Nonoyama S. and L. Lin (Tokyo Medical and Dental University)
	Mar.	"MGN-3, a Novel Antitumor agent" 92 nd Annual Meeting 2001 of American Association for Cancer Research, Louisiana Uyemura K., Tachiki K., Ghoneum M., Makinodan T., Makhijani N. and D. Yamaguchi, Drew University of Medicine and Science, Los Angeles, CA, Greater Los Angeles VA Healthcare System, Los Angeles, CA, UCLA Medical School/ Greater Los Angeles Los Angeles VA Healthcare System, Los Angeles, CA.
	Jan.	"Application to the alternative medicine of a new physiological active substance "Arabinosyloxan derivative" (MGN-3, BioBran)" 7 th Conference of Japan Mibyou System Association, Nagoya Maeda H. (Daiwa Pharmaceutical Co., Ltd.)
2000	Dec.	"A Novel Physiologically Active Substance, Rice Arabinosyloxan Derivative (MGN-3)" The Journal of Japan Mibyou System Association, Vol.6 No.2 Hiroaki Maeda
	Dec.	"Natural Biological Response Modifier (MGN-3) Shown To Be Effective Against Tumor Cell Growth" 8 th International Congress on Anti-Aging & Biomedical Technologies, Las Vegas M. Ghoneum
	Nov.	"Evaluation of Immune (Arabinosyloxan) therapy seen from NK cell activity and the CD4/CD8 ratio on cancer patients" 3 rd Annual Meeting of the Japanese Society for Complementary & Alternative Medicine & Treatment, Tokyo Takahara K. (Nishi-Shinjuku Clinic), Sano K., Okitsu M. (Sano Surgery Clinic), Matsuura H. (Mitsubishi Kagaku BCL) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
	Nov.	"Evaluation of Multiple Immunotherapies (including Arabinosyloxan) Based on NK Cell Activity and CD4/CD8 Ratio in Cancer Patients" The 3rd Annual Meeting of the Japanese Society for Complementary & Alternative Medicine & Treatment Kihachiro Takahara (Nishi-Shinjuku Clinic) Kamataro Sano (Medical Corporation Sano Surgery Clinic) Motoyoshi Okitsu (Medical Corporation Sano Surgery Clinic) Hiromi Matsuura (Mitsubishi Kagaku Bio-clinical Laboratories, Inc.) Hiroaki Maeda (Research & Development Department, Daiwa Pharmaceutical Co., Ltd.)
	Oct.	"Inhibitory effects of MGN-3 (modified arabinosyloxan from rice bran) on free radical" 59 th Annual Meeting of the Japanese Cancer Association, Yokohama Saito T., Ohkami H., Tsukada K., Tazawa K., Namikawa H., Oida S., Koike J., Yatsuzuka M. (Toyama Medical and Pharmaceutical University), Masada M. (Chiba University) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
	Jun.	"The Effect of MGN-3 on Cisplatin and Adriamycin Induced Toxicity in the Rat" American Society for Pharmacology and Experimental Therapeutics, Boston Jacoby H., Wnorowski G. (Product Safety Lab.), Sakata K. (Creative Strategy, Inc.) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
	Mar.	"The Effect of MGN-3 on Cisplatin and Adriamycin Induced Toxicity in the Rat" 101 st Annual Meeting of the American Gastroenterological Association, San Diego Jacoby H., Wnorowski G. (Product Safety Lab.), Sakata K. (Creative Strategy, Inc.) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
	Jan.	"Physiological Activator, Oryza Sativa L. Arabinosyloxan Derivate (MGN-3)" 6 th Conference of Japan Mibyou System Association, Hiroshima Japan Maeda H. (Daiwa Pharmaceutical Co., Ltd.)
1999	Dec.	"Application of Modified Rice Bran Dietary Fiber to Diabetes and Taste Preference in Streptozotocin-Induced Diabetic Rats."

		2 nd International Conference on Food Factors, Kyoto Ohara I., Onai K. (Kobe Women's University) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
	Dec.	"Immunostimulation and Cancer Prevention" 7 th International Congress on Anti-Aging & Biomedical Technologies, Las Vegas Ghoneum M. (UCLA/Drew University)
	Dec.	"Evaluation of MGN-3 (BioBran) with activation function of NK cell activity on Superoxide Scavenging Activity" 12 th Japanese Conference on Bio Therapy, Yokohama Tazawa K., Namikawa H., Oida S., Ito K., Yatsuzuka M., Koike J. (Toyama Medical and Pharmaceutical University), Masada M. (Chiba University) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
	Sep.	"Modified Rice Bran Improves Glucose Tolerance in NIDDM Adult Rats Given Streptozocin as Neonates" American College of Nutrition 40 th Annual Meeting, Washington DC Ohara I., Onai K. (Kobe woman's University) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
	Jul.	"A Study of Active Oxygen Scavenging Activity of MGN-3 (BioBran)" Methods in Kampo Pharmacology, 5 th Shirakaba-ko Symposium Kenji Tazawa, Hirohide Namikawa, Naoko Oida, Kayoko Ito, Miki Yatsuzuka, Jun Koike, Masahiro Masada, and Hiroaki Maeda
	Jul.	"Evaluation of MGN-3 (BioBran) with activation function of NK cell activity on Superoxide Scavenging Activity." 5 th Symposium in Shirakaba Lake, Methods in Kampo Pharmacology, Nagano Tazawa K., Namikawa H., Oida S., Ito K., Yatsuzuka M., Koike J. (Toyama Medical and Pharmaceutical University), Masada M. (Chiba University) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
	Jul.	"Evaluation of MGN-3 (BioBran) on Superoxide Scavenging Activity." 6 th Japanese Conference on Cancer Prevention, Tokyo Tazawa K., Namikawa H., Oida S., Ito K., Yatsuzuka M., Koike J. (Toyama Medical and Pharmaceutical University) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
	Jul.	"A Case in Which Rice Bran Arabinosylan Was Used As A Supplemental Treatment When Curing Metastasis To Bones From Lung Cancer" 2 nd Conference of Japanese Association for Alternative, Complementary and Traditional Medicine (JACT), Tokyo Sobajima T. (Hoshigaoka Welfare Annuity Hospital) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
1998	Dec.	"NK Immunorestration of Cancer Patients by MGN-3, a Modified Arabinosylan Rice Bran (Study of 32 patients followed for up to 4 years)." 6 th International Congress on Anti-Aging & Bio-Medical Technologies, Las Vegas Ghoneum M., (UCLA/Drew University)
	Dec.	"Active oxygen radical scavenging activity of the plant polysaccharide processed foodstuff BioBran" 3 rd Japanese Society for Food Factors, Tokyo Tazawa K. (Toyama Medical and Pharmaceutical University) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
	Oct.	"Immunopotentiality by utilization of MGN-3 tissue" Congress on Anti-Aging Medicine in Nevada Ghoneum M., (UCLA/Drew University)
	Sep.	"NK cell activity by MGN-3" 26 th Academy of Alternative Medicine of Cancer in LA Ghoneum M., (UCLA/Drew University)
	Aug.	" Synergistic Effect of Modified Arabinosylane (MGN-3) and Low Dose of Recombinant IL-2 Human NK Cell Activity and TNF- α Production " American Academy of Anti - Aging Medicine, 1998 East Coast Conference, New Jersey Ghoneum M. and A. Jewett (UCLA/Drew University)
	Jun.	"MGN-3 Immunotherapy for the Treatment of Cancer." The First International Symposium on Disease Prevention by IP6 & Other Rice Components, Kyoto Ghoneum M. (UCLA/Drew University) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
1997	Sep.	"The Effect of MGN-3, An Arabinosylan Compound, on Serum Lipid in Streptozotocin Induced Diabetic Rats. " 38 th American Meeting of Nutrition Annual Meeting, New York Ohara I. (Kobe Women's University) and H. Maeda (Daiwa Pharmaceutical Co., Ltd.)
1996	Jul.	"Anti-HIV activity by MGN-3 In Vitro. " 11 th International AIDS Conference in Vancouver Ghoneum M and N. Galal (UCLA/Drew University)
	Jun.	"Effect of Human Natural Killer Cell Activity and Interferon- γ Synthesis in vitro. " ASBMB/ASIP/AAI JOINT MEETING in New Orleans Ghoneum M and N. Galal (UCLA/Drew University)
	Apr.	"NK immunomodulatory function in 27 cancer patients by MGN-3, a modified arabinosylan from rice bran." 8 th Annual Meeting of the American Association for Cancer Research (AACR), Washington DC Ghoneum M and N. Galal (UCLA/Drew University)
1995	Nov.	"Immunomodulatory and Anti-Cancer Properties of (MGN-3), a modified xylose from rice bran, in 5 Patients with Breast Cancer. " American Association for Cancer Research Special Conference in Baltimore Ghoneum M. (UCLA/Drew University)
	Mar.	Establishment of the extraction technology of a new physiologically active substance "MGN-3" in rice bran The start of basic tests on MGN-3
1992	Apr.	Development of a physiologically active substance started using basidiomycete The start of co-research on immunopotentiating material with Dr. M. Ghoneum, UCLA/Drew University

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