This is for informational purposes only. NRx Fucoidan is a dietary supplement and not intended to diagnose, treat, cure or prevent any disease. These statements have not been evaluated by the FDA.

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**Introduction**

Ginnovay-Fucoidan (GV-Fucoidan) is a type of glyconutrient as a new and more specialized type of nutraceutical. The main effective ingredient in Fucoidan is the fucose, one of the eight essential biological sugars. Since 1996, a total of four Nobel Prizes in medicine have been awarded for work in glycobiology. Unlike other nutritional supplements, Fucoidan provides special saccharides, biological sugars, which have recently been identified as being absolutely essential for cell-to-cell communication through glycoproteins and glycolipids.

Typically only glucose and galactose are in the foods we eat so we don’t consume Fucose and must produce over thirty-four different enzymatic reactions to generate intermediate molecules to make Fucose. During the conversion process if there is any problem in any step (due to toxins, stress etc) it will cause a severe and chronic disease. Now there are evidences that people in Japan who consume large quantities of these seaweeds (Fucoidan) have the longest lifespan.

Fucoidan produced by BGG is extracted from two species of brown seaweeds, *Cladosiphon okamuranus* and *Ascophyllum nodosum*. Fucoidan from *Cladosiphon okamuranus* has a typical structure based on a backbone of L-fucose (Nagaoka et al., 1999). More recent studies identified a different structure for Fucoidan from *Ascophyllum nodosum* (Chevolot et al., 1999, 2001). Both *Cladosiphon okamuranus* and *Ascophyllum nodosum* were used by BGG as high quality from natural, deep, cold oceanic waters under excellent growth conditions. There is no any contamination around these fjords. The seaweed is harvested by collecting freshly cut plants that float to the surface, rather than by dredging. This ensures that the seaweed is free from contamination and minimizes the environmental impact. Both seaweeds provide excellent Fucoidan.

**Why Ginnovay-Fucoidan and its advantage**

**Characters of Ginnovay Fucoidan by BGG Advanced Technology**

- One of the highest concentrated fucoidan available in the market
- Good water-soluble
- Low heavy metal
Source: GV- Fucoidan are natural and free from pollution.

High Purification Technology: GV-Fucoidan is highest concentrated Fucoidan available in the market as far as we know, with minimum effective dosage 285 mg of GV-Fucoidan 70% per day. Low Heavy Metal Technology: The heavy metal of natural seaweed is high because of natural seaweed character. With BGG Technology GV- Fucoidan heavy metal is <20ppm, arsenic <4ppm, which assure the safety usage.

Solvent Residue: GV Fucoidan has no solvent residue. Water Soluble:

one of the best water soluble Fucoidan Stability: GV-Fucoidan has 36 month shelf life under normal storage.

Product Description
GinnovayTM Fucoidan 50- 70% is a pure white powder extracted and concentrated from Ascophyllum Nodosum and Cladosiphon Okamuranus, marine algae.

GinnovayTM-Fucoidan consists primarily of fucose, fucoidan, and other a little bit of galatose, xylose, etc. essential biologic sugars.

Application & Properties
1. Anti-cancer:
Fucoidan has been shown to be effective in the treatment of certain cancers, specifically digestive system cancers. It appears to have two anti-cancer mechanisms: One being that it causes certain types of rapidly growing cancer cells to self-destruct (apoptosis); the other is that fucoidan itself kills cancer cells without affecting normal cells.

2. Antipathogenic:
Fucoidan has potent antiviral properties towards virused such RSV, HIV. Fucoidan block the entrance of viruses into cells.

3. Benefits to the stomach:
a. By clinical trial showed Fucoidan can treat inflammation in the stomach (gastritis) as well as ulceration of the stomach or duodenum (peptic ulcer disease) caused by an infection of the stomach of the bacterium Helicobacter pylori and protects the stomach mucous membrane from damage;
b. Activates stomach peristalsis; c. Increases gastric juice secretion;
d. Prevents gastric ulcer.

4. Anticoagulant and antithrombotic activity
   Fucoidan is a potent inhibitor of platelet aggregation in vivo. Fucoidan has a specific anticoagulant activity by the activated partial thromboplastin time assay like heparin with good potential antithrombotic qualities.

5. Anti-oxidation
   Fucoidan significantly attacks free radicals and hydroxide radicals.

5. Activating Immune System.

6. Detoxification: it is possible to use macroalgae to chelate undesired metals from the body, and this has been used to benefit radiation-exposed persons.

7. Lowering High Cholesterol Levels: part of this activity is similar to that seen for other soluble fiber-containing foods (such as oats). Cholesterol binds to the soluble fibers in the bowel, where they are excreted (rather than being bound to bile salts and processed).

8. Amelioration of diabetes: The polysaccharide components of macroalgae serve the same function as other soluble fibre, which modify the uptake of glucose in the gut.

Fucoidan Structure

A. Heparin

B. Fucoidan fraction from *A. nodosum*
Common structures in fucoids from brown algae. Disaccharide structure associated with anticoagulant polysaccharides. (A) The main repeating unit \[4-\_L-Idop\_A2OSO_3-(1-3)-\_D-Glycp\_NSO_3-6OSO_3-(1-] found in the widely used anticoagulant polysaccharide anticoagulant activity, as a potentiator of antithrombin, but has activity by other routes such as activation of heparin cofactor II. (B) The repeating unit \[4)-\_Fucp(2,3di-OSO_3)-(1-3)\_Fucp(2OSO_3—(1 -3) \_Fucp(2OSO_3-(1-3) \] from A. Nodosum (C) The quasi-repeat unit identified in fucoidan from C filum

Reference
5) Zhao Xue et al. The study of antioxidant activities of fucoidan from Laminaria japonica. High technologyletters. 11(1):91-94, 2005


MATERIAL SAFETY DATA SHEET

SECTION 1. CHEMICAL PRODUCT AND IDENTIFICATION
Material Name........: Fucoidan 70% (Ascophyllum Nodosum)

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS
Ingredient Name
Fucose ..............: >28%
Fucoidan ..............: 70%

SECTION 3. HAZARDS IDENTIFICATION
EMERGENCY OVERVIEW
Physical State...........: Powder
Color.........................: Light Yellow White
POTENTIAL HEALTH EFFECTS
Heavy exposure may be irritating to eyes.

SECTION 4. FIRST AID MEASURES
Inhalation...............: Remove to fresh air
Skin Contact............: Rinse with water
Eye Contact .............: Rinse eyes thoroughly with water for 5 minutes
Spill procedure.........: Sweep up, place in plastic bag for disposal. Mop up and wash spill site. SECTION 5.

HANDLING AND STORAGE
Handling and Storage
Precautions.............: Store in cool and dry place, and in sealed container. Keep from moisture.

SECTION 6. STABILITY AND REACTIVITY
Stable if keep in cool and dry place.
Light-sensitive.

SECTION 7 TRANSPORTATION INFORMATION
Non-hazardous for air, sea, and road freight.

SECTION 8 ECOLOGICAL INFORMATION
The waste of this substance is not dangerous and harmful.
The information presented on this MSDS is, to the best of our knowledge, accurate and reliable. It is provided in good faith. It is the responsibility of the user to evaluate the relevance and completeness of this information for their application and to determine the safety, suitability and status under applicable regulations relating to this product of byproducts arising out of their process.
CERTIFICATE OF ANALYSIS

CERTIFICATE NO.  2005060803

PRODUCT                FUCOIDAN70%
PRODUCT NO.            GD-244
PACKAGE                10KG/CARTON
BATCH NO.              050506GD-244
DATE OF MANUFACTURE   May.6, 2005
QUANTITY              10KG
DATE OF CERTIFICATE    May.8, 2005

<table>
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<tr>
<th>ANALYSIS ITEMS</th>
<th>SPECIFICATIONS</th>
<th>TEST METHOD</th>
<th>RESULTS</th>
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<tr>
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<tr>
<td>(FUCOIDAN)</td>
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<td>UV</td>
<td>79.78%</td>
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MICROBIAL CONTAMINATION

| TOTAL AEROBIC COUNT          | < 1000/g       | AOAC       | CONFORMED |
| YEAST & MOULD                | < 100/g        | AOAC       | CONFORMED |
| E. COLI                      | NEGATIVE       | AOAC       | CONFORMED |
| SALMONELLA                   | NEGATIVE       | AOAC       | CONFORMED |

QUALITY CONTROL MANAGER CHECK ANALYST
Fucoidan and Diseases

The followings are the scientific paper cited from Medliner 1966-2005 with key word Fucoidan as your references

1. Cancer (14)
2. Stomach (6)
3. Antioxidant (5)
4. Immune System (8)
5. Cholesterol (24)
6. Inflammation (30)
7. Diabetes (3)
8. Anti-virus (28)
9. Clinical data for H. Pylori & non-ulcer dyspepsia
10. Dosage Recommendation

Note: ( ) number of articles

Cancer (1-14)

Result <1> (cancer)
Aisa Y. Miyakawa Y. Nakazato T. Shibata H. Saito K. Ikeda Y. Kizaki M. Department of Internal Medicine, Keio University School of Medicine, Tokyo, Japan. Fucoidan induces apoptosis of human HS-sultan cells accompanied by activation of caspase-3 and down-regulation of ERK pathways.

Result <2> (cancer)
Inoue M. Fujii H. Kaseyama H. Yamashina I. Nakada H. Faculty of Engineering, Kyoto Sangyo University, Kita-ku, Kyoto, 603-8555, Japan. Stimulation of macrophages by mucins through a macrophage scavenger receptor.

Result <3> (cancer)
Preventive effects of Cladosiphon fucoidan against Helicobacter pylori infection in Mongolian gerbils.
Result <4> (cancer)
Liu JM. Haroun-Bouhedja F. Boisson-Vidal C.
Laboratoire de Recherche sur les Macromolecules (URM 7540, URM2, CNRS/IFREMER) Institut Galilee, Universite Paris 13, Villetaneuse, France.
Analysis of the in vitro inhibition of mammary adenocarcinoma cell adhesion by sulphated polysaccharides.
Result <5> (cancer)
Zugmaier G. Favoni R. Jaeger R. Rosen N. Knabbe C.
Department of Hematology/Oncology, Philipps-University, Marburg, Germany.
Polysulfated heparinoids selectively inactivate heparin-binding angiogenesis factors.
Result <6> (cancer)
Result <7> (cancer)
Riou D. Colliec-Jouault S. Pinczon du Sel D. Bosch S. Siavoshian S. Le Bert V. Tomasoni C. Sinquin C. Durand P. Roussakis C.
ISOMer (Institut des Substances et Organismes de la Mer), SMAB, Laboratoire de Pharmacologie Marine, Faculte de Pharmacie, Nantes, France.
Result <8> (cancer)
Itoh H. Noda H. Amano H. Ito H.
Laboratory of Marine Biochemistry, Faculty of Bioresources, Mie University, Tsu, Japan.
Immunological analysis of inhibition of lung metastases by fucoidan (GIV-A) prepared from brown seaweed Sargassum thunbergii.
Result <9> (cancer)
Biochemistry Laboratory, Hokkaido University School of Medicine, Sapporo, Japan.
Hepatocyte growth factor specifically binds to sulfoglycolipids.
Result <10> (cancer)
Itoh H. Noda H. Amano H. Zhuaug C. Mizuno T. Ito H.
Laboratory of Marine Biochemistry, Faculty of Bioresources, Mie University, Japan.
Result <11> (cancer)
Steuer MK. Gabius HJ. Bardosi A. Matthias R.
Klinik und Poliklinik fur Hals-Nasen-Ohrenheilkunde, Universitat Koln. [Histochemical identification of endogenous lectins using labelled neoglycoproteins in human head-and-neck squamous cell carcinoma]. [Review] [33 refs] [German]
Result <12> (cancer)
Kayser K. Gabius HJ. Ciesiolka T. Ebert W. Bach S.
Result <13> (cancer)
Taraboletti G. Roberts DD. Liotta LA.
Laboratory of Pathology, National Cancer Institute, Bethesda, Maryland 20892. Thrombospondin-induced tumor cell migration: haptotaxis and chemotaxis are mediated by different molecular domains. Journal of Cell Biology. 105(5):2409-15, 1987 Nov.
Result <14> (cancer)
Hashimoto S. Nomoto K. Nagaoka M. Yokokura T.

2. Stomach (1-6)  Page 3-4
Result <1> (stomach)
Shibata H. Nagaoka M. Takagi IK. Hashimoto S. Aiyama R. Yokokura T. Yakult Central Institute for Microbiological Research, Kunitachi, Tokyo, Japan. hideyuki-shibata@yakult.co.jp
Result <2> (stomach)
Nagaoka M. Shibata H. Kimura-Takagi I. Hashimoto S. Aiyama R. Ueyama S. Yokokura T. Yakult Central Institute for Microbiological Research, Kunitachi, Tokyo, Japan. masato-nagaoka@yakult.co.jp
Anti-ulcer effects and biological activities of polysaccharides from marine algae. [Review] [46 refs]

Result <3> (stomach)
Shibata H. Kimura Takagi I. Nagaoka M. Hashimoto S. Sawada H. Ueyama S. Yokokura T.
Yakult Central Institute for Microbiological Research, Tokyo, Japan.
Inhibitory effect of Cladosiphon fucoidan on the adhesion of Helicobacter pylori to human gastric cells.

Result <4> (stomach)
Shibata H. Nagaoka M. Takagi IK. Hashimoto S. Aiyama R. Yokokura T.
Yakult Central Institute for Microbiological Research, Kunitachi, Tokyo, Japan.
hideyuki-shibata@yakult.co.jp
Effect of oligofucose derivatives on acetic acid-induced gastric ulcer in rats.

Result <5> (stomach)
Yakult Central Institute for Microbiological Research, Kunitachi, Tokyo, Japan.
hideyuki-shibata@yakult.co.jp
Properties of fucoidan from Cladosiphon okamuranus tokida in gastric mucosal protection.

Result <6> (stomach)
Nagaoka M. Shibata H. Kimura-Takagi I. Hashimoto S. Aiyama R. Ueyama S. Yokokura
Yakult Central Institute for Microbiological Research, Kunitachi, Tokyo, Japan.
masato-nagaoka@yakult.co.jp
Anti-ulcer effects and biological activities of polysaccharides from marine algae. [Review] [46 refs]

3. Antioxidant (1-5)
Result <2> (Antioxidant)
Carvalho MD. Harada LM. Gidlund M. Ketelhuth DF. Boschcov P. Quintao EC.
Lipids Laboratory (LIM/10), University of Sao Paulo Medical School, Sao Paulo, Brazil.
Macrophages take up triacylglycerol-rich emulsions at a faster rate upon co-incubation
with native and modified LDL: An investigation on the role of natural chylomicrons in
atherosclerosis.

Result <3> (Antioxidant)
Mitchell DJ. Yu J. Tyml K.
Department of Pharmacology and Toxicology, University of Western Ontario, London, Canada.
Local L-NAME decreases blood flow and increases leukocyte adhesion via CD18.

Result <4> (Antioxidant)
Kalayoglu MV. Byrne GI.
Department of Medical Microbiology and Immunology, University of Wisconsin Medical School,
Madison 53706, USA.
Induction of macrophage foam cell formation by Chlamydia pneumoniae.

Result <5> (Antioxidant)
Ekman T. Risberg B. Bagge U. Braide M.
Department of Medicine, University of Gothenburg, Sweden.
Blocking of endothelial-leukocyte interaction (rolling) does not improve reflow in the
rat gastric mucosa after hemorrhagic shock and retransfusion.

4. Immune Modulation (1-8)  Page 5-6

Result <1> (Immune Modulation)
Zhang Z. Guo K. Schluesener HJ.
Institute of Brain Research, University of Tuebingen, Calwer Str. 3, D-72076 Tuebingen,
Germany. zhangzhiren@yahoo.com
The immunostimulatory activity of CpG oligonucleotides on microglial N9 cells is affected by a
polyguanosine motif.

Result <2> (Immune Modulation)
Zhang Z. Weinschenk T. Schluesener HJ.
Institute of Brain Research, University of Tuebingen, Calwer Street 3, Tuebingen D-72076,
Germany. zhangzhiren@yahoo.com
Uptake, intracellular distribution, and novel binding proteins of immunostimulatory CpG
oligodeoxynucleotides in microglial cells.
Result <3> (Immune Modulation)
Department of Pediatrics and Juvenile Medicine, University of Vienna, Medical School, A-1090 Vienna, Austria.
Human milk--derived oligosaccharides and plant-derived oligosaccharides stimulate cytokine production of cord blood T-cells in vitro.
Result <4> (Immune Modulation)
Brenner BC. Kadel S. Grigorovich S. Linderkamp O.
Department of Cardiology, Children's Hospital, Moorenstrasse 5, Dusseldorf, Germany.
Brenner@med.uni-duesseldorf.de
Mechanisms of L-selectin-induced activation of the nuclear factor of activated T lymphocytes (NFAT).
Result <5> (Immune Modulation)
Radsak MP. Hilf N. Singh-Jasuja H. Braedel S. Brossart P. Rammensee HG. Schild H.
University Medical Hospital, Department Hematology/Oncology, University of Tubingen, Tubingen, Germany.
The heat shock protein Gp96 binds to human neutrophils and monocytes and stimulates effector functions.
Result <6> (Immune Modulation)
Machelska H. Cabot PJ. Mousa SA. Zhang Q. Stein C.
Department of Anesthesiology and Critical Care Medicine, Johns Hopkins University, Baltimore, MD 21287-8711, USA.
Pain control in inflammation governed by selectins.[see comment].
Comments
Comment in: Nat Med. 1998 Dec;4(12):1359-60; PMID: 9846566
Result <7> (Immune Modulation)
Paresce DM. Ghosh RN. Maxfield FR.
Pathology Department, Columbia University, New York, New York 10032, USA.
Microglial cells internalize aggregates of the Alzheimer's disease amyloid beta-protein via a scavenger receptor.
Result <8> (Immune Modulation)
Mallet S. Rosen SD. Hyun W.
5. Cholesterol (1-24)

Result <1> (Cholesterol)
Santiago-Garcia J. Kodama T. Pitas RE.
Gladstone Institutes of Cardiovascular Disease and Neurological Disease, Cardiovascular Research Institute, Department of Pathology, University of California, San Francisco, California 94143, USA.
The class A scavenger receptor binds to proteoglycans and mediates adhesion of macrophages to the extracellular matrix.

Result <2> (Cholesterol)
Bruneau N. Richard S. Silvy F. Verine A. Lombardo D.
INSERM U-559, Unite de Recherche de Physiopathologie des Cellules Epitheliales and Equipe d'Accueil 3289, Universite de la Mediterranee, Faculte de Medecine, Marseilles, France.
Lectin-like Ox-LDL receptor is expressed in human INT-407 intestinal cells: involvement in the transcytosis of pancreatic bile salt-dependent lipase.

Result <3> (Cholesterol)
Antic A. Dzenko KA. Pachter JS.
Blood-Brain Barrier Laboratory, Department of Pharmacology, University of Connecticut Health Center, 263 Farmington Avenue, Farmington, Connecticut, 06030, USA.
Engagement of the scavenger receptor is not responsible for beta-amyloid stimulation of monocytes to a neurocytopathic state.

Result <4> (Cholesterol)
Yancey PG. Miles S. Schwegel J. Jerome WG.
Department of Pathology, Wake Forest University School of Medicine, Medical Center Blvd., Winston-Salem, NC 27157-1092, USA.
Uptake and trafficking of mildly oxidized LDL and acetylated LDL in THP-1 cells does not explain the differences in lysosomal metabolism of these two lipoproteins.

Result <5> (Cholesterol)
Cornicelli JA. Butteiger D. Rateri DL. Welch K. Daugherty A.
Department of Vascular Diseases, Parke Davis, 2800 Plymouth Road, Ann Arbor, MI 48106, USA.


Result <6> (Cholesterol)

Department of Health Chemistry, Faculty of Pharmaceutical Sciences, University of Tokyo, Japan.

Chinese hamster ovary cells expressing a novel type of acetylated low density lipoprotein receptor. Isolation and characterization.
Result <7> (Cholesterol)
Fuhrman B. Brook GJ. Aviram M.
Lipid Research Unit, Rambam Medical Center, Haifa, Israel.

Lipid-protein particles secreted from activated platelets reduce macrophage uptake of low density lipoprotein.
Result <8> (Cholesterol)
Kalayoglu MV. Byrne GI.

Department of Medical Microbiology and Immunology, University of Wisconsin Medical School, Madison 53706, USA.

Induction of macrophage foam cell formation by Chlamydia pneumoniae.
Result <9> (Cholesterol)
Paresce DM. Ghosh RN. Maxfield FR.

Pathology Department, Columbia University, New York, New York 10032, USA.

Microglial cells internalize aggregates of the Alzheimer's disease amyloid beta-protein via a scavenger receptor.
Result <10> (Cholesterol)

Department of Health Chemistry, Faculty of Pharmaceutical Sciences, University of Tokyo, Japan.

Chinese hamster ovary cells expressing a novel type of acetylated low density lipoprotein receptor. Isolation and characterization.
Result <11> (Cholesterol)
Soeda S. Ohmagari Y. Shimeno H. Nagamatsu A.
Department of Biochemistry, Faculty of Pharmaceutical Sciences, Fukuoka University, Japan.
Preparation of aminated fucoidan and its evaluation as an antithrombotic and antilipemic agent.
Result <12> (Cholesterol)

Zhang Q. Young TF. Ross RF.
Veterinary Medical Research Institute, Iowa State University, Ames 50011.
Glycolipid receptors for attachment of Mycoplasma hyopneumoniae to porcine respiratory ciliated cells.
Result <13> (Cholesterol)

Soeda S. Ohmagari Y. Shimeno H. Nagamatsu A.
Department of Biochemistry, Faculty of Pharmaceutical Sciences, Fukuoka University, Japan.
Preparation of oversulfated fucoidan fragments and evaluation of their antithrombotic activities.
Result <14> (Cholesterol)

Bottalico LA. Kendrick NC. Keller A. Li Y. Tabas I.
Department of Medicine, Columbia University College of Physicians and Surgeons, New York, NY 10032.
Cholesteryl ester loading of mouse peritoneal macrophages is associated with changes in the expression or modification of specific cellular proteins, including increase in an alpha-enolase isoform.
Result <15> (Cholesterol)

Pancake SJ. Holt GD. Mellouk S. Hoffman SL.
Malaria Program, Naval Medical Research Institute, Bethesda, Maryland 20889-5055.
Malaria sporozoites and circumsporozoite proteins bind specifically to sulfated glycoconjugates.
Result <16> (Cholesterol)

Fuhrman B. Brook GJ. Aviram M.
Lipid Research Unit, Rambam Medical Center, Haifa, Israel.
Lipid-protein particles secreted from activated platelets reduce macrophage uptake of low density lipoprotein.

17
Result <17> (Cholesterol)
Data RE. Williams SB. Roberts DD. Gralnick HR.
Clinical Pathology Department, National Cancer Institute, National Institutes of Health, Bethesda, MD.
Platelets adhere to sulfatides by von Willebrand factor dependent and independent mechanisms.

Result <18> (Cholesterol)
Nishikawa K. Arai H. Inoue K.
Department of Health Chemistry, Faculty of Pharmaceutical Sciences, University of Tokyo, Japan.
Scavenger receptor-mediated uptake and metabolism of lipid vesicles containing acidic phospholipids by mouse peritoneal macrophages.

Result <19> (Cholesterol)
Holt GD. Pangburn MK. Ginsburg V.
Laboratory of Structural Biology, National Institute of Diabetes, Digestive, and Kidney Disease, National Institutes of Health, Bethesda, Maryland 20892.
Properdin binds to sulfatide [Gal(3-SO4)beta 1-1 Cer] and has a sequence homology with other proteins that bind sulfated glycoconjugates.

Result <20> (Cholesterol)
Holt GD. Krivan HC. Gasic GJ. Ginsburg V.
Laboratory of Structural Biology, National Institute of Diabetes, Digestive and Kidney Diseases, Bethesda, Maryland 20892.
Antistasin, an inhibitor of coagulation and metastasis, binds to sulfatide (Gal(3-SO4) beta 1-1 Cer) and has a sequence homology with other proteins that bind sulfated glycoconjugates.

Result <21> (Cholesterol)
Vijayagopal P. Srinivasan SR. Jones KM. Radhakrishnamurthy B. Berenson GS.
Complexes of low-density lipoproteins and arterial proteoglycan aggregates promote cholesteryl ester accumulation in mouse macrophages.

Result <22> (Cholesterol)
Roberts DD. Haverstick DM. Dixit VM. Frazier WA. Santoro SA. Ginsburg V.
The platelet glycoprotein thrombospondin binds specifically to sulfated glycolipids.

Result <23> (Cholesterol)
Via DP. Plant AL. Craig IF. Gotto AM Jr. Smith LC.
Metabolism of normal and modified low-density lipoproteins by macrophage cell lines of murine and human origin.
Result <24> (Cholesterol)
Clevidence BA. Morton RE. West G. Dusek DM. Hoff HF.
Cholesterol esterification in macrophages. Stimulation by lipoproteins containing apo B isolated from human aortas.

6. Inflammation (1-30)  Page 11-15

Result <1> (Inflammation)
Ritter LS. Stempel KM. Coull BM. McDonagh PF.
University of Arizona, College of Nursing, Department of Neurology, Sarver Heart Center, PO Box 245023, Tucson, AZ 85724-5023, USA. lritter@nursing.arizona.edu
Leukocyte-platelet aggregates in rat peripheral blood after ischemic stroke and reperfusion.
Biological Research for Nursing. 6(4):281-8, 2005 Apr.
Result <2> (Inflammation)
Machelska H. Brack A. Mousa SA. Schopohl JK. Rittner HL. Schafer M. Stein C. Klinik fur Anaesthesiologie und operative Intensivmedizin, Charite-Universitatsmedizin, Campus Benjamin Franklin, Hindenburgdamm 30, D-12200 Berlin, Germany.
halina.machelska@charite.de
Selectins and integrins but not platelet-endothelial cell adhesion molecule-1 regulate opioid inhibition of inflammatory pain.
Result <3> (Inflammation)
Kirkham PA. Spooner G. Ffoulkes-Jones C. Calvez R.
Novartis HRC, Horsham, West Sussex, England, UK. paul.kirkham@pharma.novartis.com
Cigarette smoke triggers macrophage adhesion and activation: role of lipid peroxidation products and scavenger receptor.
Result <4> (Inflammation)
Takano-Ishikawa Y. Goto M. Yamaki K.
National Food Research Institute, Tsukuba, Ibaraki, Japan.
Analysis of leukocyte rolling and migration—using inhibitors in the undisturbed microcirculation of the rat mesentery—on inflammatory stimulation.
Result <5> (Inflammation)


Kubes P. Payne D. Woodman RC. Immunology Research Group, Department of Physiology and Biophysics and Department of Medicine, University of Calgary Health Sciences Center, Calgary, Alberta, Canada T2N 4N1. pkubes@ucalgary.ca Molecular mechanisms of leukocyte recruitment in postischemic liver microcirculation. American Journal of Physiology - Gastrointestinal & Liver Physiology. 283(1):G139-47, 2002 Jul. Result <8> (Inflammation)


Le Filliatre G. Sayah S. Latournerie V. Renaud JF. Finet M. Hanf R. Service de Pharmacologie, Laboratoire Innothera, 7 – 9 av Francois Vincent Raspail, BP 12, 94111, Arcueil Cedex, France. gael.le.filliatre@innothera.com Cyclo-oxygenase and lipoxygenase pathways in mast cell dependent-neurogenic inflammation induced by electrical stimulation of the rat saphenous nerve. British Journal of Pharmacology. 132(7):1581-9, 2001 Apr. Result <10> (Inflammation)

Serra MF. Diaz BL. Barreto EO. Cordeiro RS. Nazare Meirelles MN. Williams TJ. Martins MA. Silva PM. Depto de Fisiologia e Farmacodinamica, Instituto Oswaldo Cruz, FIOCRUZ, Rio de Janeiro, Brazil. Mechanism underlying acute resident leukocyte disappearance induced by immunological and non-immunological stimuli in rats: evidence for a role for the coagulation system.
Result <11> (Inflammation)
Verdrengh M. Erlandsson-Harris H. Tarkowski A.
Department of Rheumatology, University of Goteborg, Sweden.
margareta.verdrengh@immuno.gu.se
Role of selectins in experimental Staphylococcus aureus-induced arthritis.
Result <12> (Inflammation)
Del Bigio MR. Yan HJ. Campbell TM. Peeling J.
Department of Pathology, University of Manitoba, Winnipeg, Canada.
Effect of fucoidan treatment on collagenase-induced intracerebral hemorrhage in rats.
Result <13> (Inflammation)
Malhotra R. Ward M. Sim RB. Bird MI.
Cellular Biochemistry Unit, Glaxo-Wellcome Medicines Research Centre, Gunnels Wood Road,
Stevenage, Hertfordshire SG1 2NY, UK. RM18326@glaxowellcome.co.uk
Identification of human complement Factor H as a ligand for L-selectin.
Result <14> (Inflammation)
Ushakova NA. Preobrazhenskaia ME. Nifant'ev NE. Usov AI. Pochechueva TV. Galanina OE. Bovin NV.
Institute of Biomedical Chemistry, Russian Academy of Medical Sciences, Moscow.
[inhibitory activity of monomeric and polymeric selectin ligands]. [Russian]
Result <15> (Inflammation)
Machelska H. Cabot PJ. Mousa SA. Zhang Q. Stein C.
Department of Anesthesiology and Critical Care Medicine, Johns Hopkins University,
Baltimore, MD 21287-8711, USA.
Pain control in inflammation governed by selectins.[see comment].
Comments
Comment in: Nat Med. 1998 Dec;4(12):1359-60; PMID: 9846566
Result <16> (Inflammation)
Semenov AV. Mazurov AV. Preobrazhenskaia ME. Ushakova NA. Mikhailov VI. Berman AE.
Usov AI. Nifant'ev NE. Bovin NV.
Institute of Experimental Cardiology, Cardiology Research Center, Moscow.
[Sulfated polysaccharides as inhibitors of receptor activity of P-selectin and P-selectin-dependent inflammation]. [Russian]
Result <17> (Inflammation)
Granert C. Raud J. Lindquist L.
Department of Infectious Diseases, Huddinge Hospital, Sweden.
The polysaccharide fucoidin inhibits the antibiotic-induced inflammatory cascade in experimental pneumococcal meningitis.

Result <18> (Inflammation)
Preobrazhenskaya ME. Berman AE. Mikhailov VI. Ushakova NA. Mazurov AV. Semenov AV. Usov AI. Nifant'ev NE. Bovin NV.
Institute of Biomedical Chemistry, Russian Academy of Medical Sciences, Pogodinskaya, Moscow.
Fucoidan inhibits leukocyte recruitment in a model peritoneal inflammation in rat and blocks interaction of P-selectin with its carbohydrate ligand.

Result <19> (Inflammation)
Davenpeck KL. Steeber DA. Tedder TF. Bochner BS.
Department of Medicine, The Johns Hopkins University School of Medicine, Baltimore, MD 21224, USA.
P- and L-selectin mediate distinct but overlapping functions in endotoxin-induced leukocyte-endothelial interactions in the rat mesenteric microcirculation.

Result <20> (Inflammation)
Zuniga A. Marques A. Gabaldon M.
Centro de Investigacion, Hospital La Fe, Valencia, Spain.
Proinflammatory activity on rat carotid endothelium of albumins obtained by different procedures.

Result <21> (Inflammation)
Wong J. Johnston B. Lee SS. Bullard DC. Smith CW. Beaudet AL. Kubes P.
Department of Medicine, University of Calgary, Calgary, Alberta T2N 4N1, Canada.
A minimal role for selectins in the recruitment of leukocytes into the inflamed liver microvasculature.

Result <22> (Inflammation)
Teixeira MM. Hellewell PG.
Imperial College School of Medicine, National Heart and Lung Institute, London.
The effect of the selectin binding polysaccharide fucoidin on eosinophil recruitment in vivo.
Result <23> (Inflammation)
Terada LS. Mahr NN. Jacobson ED.
University of Colorado Health Sciences Center, Denver, Colorado 80262, USA.
lance.terada@UCHSC.edu
Nitric oxide decreases lung injury after intestinal ischemia.

Result <24> (Inflammation)
Fuhlbrigge RC. Alon R. Puri KD. Lowe JB. Springer TA.
Department of Medicine, Children's Hospital, Boston, Massachusetts 02115, USA.
Sialylated, fucosylated ligands for L-selectin expressed on leukocytes mediate tethering and rolling adhesions in physiologic flow conditions.

Result <25> (Inflammation)
Paresce DM. Ghosh RN. Maxfield FR.
Pathology Department, Columbia University, New York, New York 10032, USA.
Microglial cells internalize aggregates of the Alzheimer's disease amyloid beta-protein via a scavenger receptor.

Result <26> (Inflammation)
Shimaoka M. Ikeda M. Iida T. Taenaka N. Yoshiya I. Honda T.
Research Institute for Microbial Diseases, Osaka University, Osaka University Hospital, Japan.
Fucoidan, a potent inhibitor of leukocyte rolling, prevents neutrophil influx into phorbol-ester-induced inflammatory sites in rabbit lungs.

Result <27> (Inflammation)
Bartlett MR. Warren HS. Cowden WB. Parish CR.
Division of Cell Biology, John Curtin School of Medical Research, Australian National University, Canberra.
Effects of the anti-inflammatory compounds castanospermine, mannose-6-phosphate and fucoidan on allograft rejection and elicited peritoneal exudates.

Result <28> (Inflammation)
Hall SE. Savill JS. Henson PM. Haslett C.
Department of Medicine, Royal Postgraduate Medical School, Hammersmith Hospital, London, United Kingdom.
Apoptotic neutrophils are phagocytosed by fibroblasts with participation of the fibroblast vitronectin receptor and involvement of a mannose/fucose-specific lectin.
Result <29> (Inflammation)
Teixeira MM. Hellewell PG.
Department of Applied Pharmacology, National Heart and Lung Institute, London.
Suppression by intradermal administration of heparin of eosinophil accumulation but not oedema formation in inflammatory reactions in guinea-pig skin.

Result <30> (Inflammation)
Damle NK. Klussman K. Dietsch MT. Mohagheghpour N. Aruffo A.
Bristol-Myers Squibb Pharmaceutical Research Institute, Seattle, WA 98121. GMP-140 (P-selectin/CD62) binds to chronically stimulated but not resting CD4+ T lymphocytes and regulates their production of proinflammatory cytokines.

7. Diabetes (1-3)

Result <1> (Diabetes)
Nellore K. Harris NR.
Department of Bioengineering, Pennsylvania State University, University Park, Pennsylvania, USA.
Inhibition of leukocyte adherence enables venular control of capillary perfusion in streptozotocin-induced diabetic rats.

Result <2> (Diabetes)
Department of Metabolic Diseases, Faculty of Medicine, University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo, 113-8655 Japan.
FEEL-1 and FEEL-2 are endocytic receptors for advanced glycation end products.

Result <3> (Diabetes)
Schnitzer JE. Bravo J.
Department of Medicine and Pathology, University of California-San Diego, School of Medicine, La Jolla 92093-0651.
High affinity binding, endocytosis, and degradation of conformationally modified albumins. Potential role of gp30 and gp18 as novel scavenger receptors.

8. Anti-virus (1-28)

Result <1> (Anti-virus)
Malhotra R. Ward M. Bright H. Priest R. Foster MR. Hurle M. Blair E. Bird M.
Respiratory and Inflammation CEDD, GlaxoSmithKline Medicines Research Centre, Gunnels Wood Road, Stevenage, Hertfordshire SG1 2NY, UK. rm18326@gsk.com
Isolation and characterisation of potential respiratory syncytial virus receptor(s) on epithelial cells.
Result <2> (Anti-virus)
Lee JB. Hayashi K. Hashimoto M. Nakano T. Hayashi T.
Faculty of Pharmaceutical Sciences, Toyama Medical and Pharmaceutical University, Sugitani, Toyama 930-0194, Japan.
Novel antiviral fucoidan from sporophyll of Undaria pinnatifida (Mekabu).
Result <3> (Anti-virus)
Klarzynski O. Descamps V. Plesse B. Yvin JC. Kloareg B. Fritig B.
Institut de Biologie Moleculaire des Plantes du CNRS, 67084 Strasbourg, France. Sulfated fucan oligosaccharides elicit defense responses in tobacco and local and systemic resistance against tobacco mosaic virus.
Result <4> (Anti-virus)
Ponce NM. Pujol CA. Damonte EB. Flores ML. Stortz CA.
Result <5> (Anti-virus)
Romanos MT. Andrada-Serpa MJ. Mourao PA. Yoneshigue-Valentin Y. Costa SS. Pereira MS. Miranda MM. Goncalves JL. Wigg MD.
Departamento de Virologia do Instituto de Microbiologia Prof. Paulo de Goes, Universidade Federal do Rio de Janeiro, CCS, Bloco I, Rio de Janeiro, Brazil. A sulphated fucan from the Laminaria abyssalis inhibits the human T cell lymphotropic virus type 1-induced syncytium formation in HeLa cells.
Result <6> (Anti-virus)
Wang HX. Ng TB.
Examination of lectins, polysaccharopeptide, polysaccharide, alkaloid, coumarin and trypsin inhibitors for inhibitory activity against human immunodeficiency virus reverse transcriptase and glycohydrolases.
Result <7> (Anti-virus)
Preeprame S. Hayashi K. Lee JB. Sankawa U. Hayashi T.
Faculty of Pharmaceutical Sciences, Toyama Medical and Pharmaceutical University, Sugitani, Japan.
A novel antivirally active fucan sulfate derived from an edible brown alga, Sargassum horneri.
Result <8> (Anti-virus)

Schaeffer DJ. Krylov VS.
Department of Veterinary Biosciences, University of Illinois, 201 South Lincoln Avenue, Urbana, Illinois 61802, USA.
Anti-HIV activity of extracts and compounds from algae and cyanobacteria. [Review] [115 refs]
Result <9> (Anti-virus)

Iqbal M. Flick-Smith H. McCauley JW.
Division of Molecular Biology, Institute for Animal Health, Compton Laboratory, Compton, Newbury RG20 7NN, UK.
Interactions of bovine viral diarrhoea virus glycoprotein E(rns) with cell surface glycosaminoglycans.
Result <10> (Anti-virus)

Feldman SC. Reynaldi S. Stortz CA. Cerezo AS. Damont EB.
Departamento de Quimica Organica-CIHIDECAR, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Ciudad Universitaria, Argentina.
Antiviral properties of fucoidan fractions from Leathesia difformis.
Phytomedicine. 6(5):335-40, 1999 Nov.
Result <11> (Anti-virus)

Wloch MK. Pasquini S. Ertl HC. Pisetsky DS.
Medical Service, Durham VA Medical Center, NC 27705, USA.
The influence of DNA sequence on the immunostimulatory properties of plasmid DNA vectors.
Result <12> (Anti-virus)

Hoshino T. Hayashi T. Hayashi K. Hamada J. Lee JB. Sankawa U.
Faculty of Pharmaceutical Sciences, Toyama Medical and Pharmaceutical University, Sugitani, Japan.
An antivirally active sulfated polysaccharide from Sargassum horneri (TURNER) C. AGARDH.
Result <13> (Anti-virus)

Wloch MK. Pasquini S. Ertl HC. Pisetsky DS.
Medical Service, Durham VA Medical Center, NC 27705, USA.
The influence of DNA sequence on the immunostimulatory properties of plasmid DNA vectors.
Result <14> (Anti-virus)
Zeitlin L. Whaley KJ. Hegarty TA. Moench TR. Cone RA.
Department of Biophysics, Johns Hopkins University, Baltimore, Maryland 21218, USA.
Tests of vaginal microbicides in the mouse genital herpes model.
Result <15> (Anti-virus)
Crance JM. Gratier D. Guimet J. Jouan A.
Unite de Virologie, Centre de Recherches du Service de Sante des Armees, La Tronche, France.
Inhibition of sandfly fever Sicilian virus (Phlebovirus) replication in vitro by antiviral compounds.
Result <16> (Anti-virus)
Zacharopoulos VR. Phillips DM.
The Population Council, 1230 York Ave, New York, NY 10021, USA.
Cell-mediated HTLV-I infection of a cervix-derived epithelial cell line.
Result <17> (Anti-virus)
Pearce-Pratt R. Phillips DM.
Population Council, New York, New York 10021, USA.
Sulfated polysaccharides inhibit lymphocyte-to-epithelial transmission of human immunodeficiency virus-1.
Result <18> (Anti-virus)
Sulfated polyanions block Chlamydia trachomatis infection of cervix-derived human epithelia.
Infection & Immunity. 63(9):3520-6, 1995 Sep.
Result <19> (Anti-virus)
Su HR. Boackle RJ.
Department of Stomatology, Medical University of South Carolina, Charleston 29425-2230. Heparin mediates binding of S-protein/vitronectin to the envelope glycoprotein of the human immunodeficiency virus and CD4.
International Archives of Allergy & Immunology. 105 (3):238-44, 1994 Nov.
Result <20> (Anti-virus)
Takami M. Sone T. Mizumoto K. Kino K. Tsunoo H.
Division of Biochemical Genetics, Meiji Institute of Health Science, Kanagawa, Japan.
Maleylated human serum albumin inhibits HIV-1 infection in vitro.
Biochimica et Biophysica Acta. 1180(2):180-6, 1992 Dec 10.

Result <21> (Anti-virus)
McClure MO. Moore JP. Blanc DP. Scotting P. Cook GM. Keynes RJ. Weber JN. Davies D. Weiss RA.
Investigations into the mechanism by which sulfated polysaccharides inhibit HIV infection in vitro.

Result <22> (Anti-virus)
Garcia-Villalon D. Gil-Fernandez C.
Centro de Investigaciones Biologicas, Consejo Superior de Investigaciones Cientificas, Madrid, Spain.
Antiviral activity of sulfated polysaccharides against African swine fever virus.

Result <23> (Anti-virus)
Andrei G. De Clercq E.
Rega Institute for Medical Research, Katholieke Universiteit Leuven, Belgium.
Inhibitory effect of selected antiviral compounds on arenavirus replication in vitro.

Result <24> (Anti-virus)
Parish CR. Low L. Warren HS. Cunningham AL.
Division of Cell Biology, John Curtin School of Medical Research, Australian National University, Canberra.
A polyanion binding site on the CD4 molecule. Proximity to the HIV-gp120 binding region.

Result <25> (Anti-virus)
Venkateswaran PS. Millman I. Blumberg BS.
Interaction of fucoidan from Pelvetia fastigiata with surface antigens of hepatitis B and woodchuck hepatitis viruses.

Result <26> (Anti-virus)
Baba M. Snoeck R. Pauwels R. de Clercq E.
Rega Institute for Medical Research, Katholieke Universiteit Leuven, Belgium.
Sulfated polysaccharides are potent and selective inhibitors of various enveloped viruses, including herpes simplex virus, cytomegalovirus, vesicular stomatitis virus, and human immunodeficiency virus.

Result <27> (Anti-virus)
Baba M. Nakajima M. Schols D. Pauwels R. Balzarini J. De Clercq E.
Department of Human Biology, Rega Institute for Medical Research, University of Leuven, Belgium.
Pentosan polysulfate, a sulfated oligosaccharide, is a potent and selective anti-HIV agent in vitro.
Result <28> (Anti-virus)
Mizumoto K. Sugawara I. Ito W. Kodama T. Hayami M. Mori S.
Division of Biochemical Genetics, Meiji Institute of Health Science, Kanagawa, Japan.
Sulfated homopolysaccharides with immunomodulating activities are more potent anti-HTLV-III agents than sulfated heteropolysaccharides.

Clinical Trial Halicobacter Pylori and non-ulcer dyspepsia

Result <1> Clinical data for non-ulcer dyspepsia
Accession Number
CN-00426121
Author
Effect of fucoidan-containing tea on non-ulcer dyspepsia.
Result <2> Clinical Data for non-ulcer dyspepsia
Accession Number
CN-00424779
Author
Effect of fucoidan containing tea on the eradication of H. pylori and non-ulcer dyspepsia.
Some clinical studies have been performed with fucoidans to determine their possible value in the prevention or even treatment of certain disease conditions. Nagaoka (2000) (1) described a study in which the symptoms of non-ulcer dyspepsia were relieved over a period of 2 weeks by the oral administration of 1.5-4.5 mg/kg/day of fucoidan.

The other research that demonstrates the excellent inhibitory effects on the adhesion of the ulcer-causing pathogen H. pylori to gastric cells in a small clinical study with a fucoidan-rich undaria preparation, GFS™, subjects who took oral fucoidan at a dosage of 2.24 g/day for 10 days experienced inhibition of reactivation and enhanced healing of herpes infections (HSV-1, HSV-2, herpes zoster and Epstein-Barr). In another study, healthy volunteers ingested a more purified undaria fucoidan (3 g per day for 12 days). An increase in the blood stem cell marker CXCR4 was observed (2). This cell receptor is thought to act as a homing receptor that allows stem cells to lodge in organs expressing SDF-1.


This supplement has been proven useful for many years. These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.