Approaching Multiple Myeloma using Rice Bran Arabinoxylan Derivative

Immunomodulatory functions may be useful in combination with existing therapies

Rice bran arabinoxylan derivative ("BioBran"; brand name "Lentin plus 1000") has been shown to be a BRM (biological response modifier) that activates NK cells, and is being used as an approach for a range of diseases for its effects in enhancing the immune system. Professor M. Ghoneum of UCLA and Drew Medical College is a leading researcher into NK cells and cancer, and has performed many clinical studies using "BioBran". He has recently performed a new case study on its effects on multiple myeloma. Here, the professor outlines about the study and talks about the possibility of its use in combination therapy.

Dr Mamdooh Ghoneum

Graduated from Mansoura University, Egypt. Received a science PhD in radioimmunology from the University of Tokyo. Studied as a postdoctoral researcher at the Department of Cellular and Molecular Immunology, University of California at Los Angeles (UCLA), before taking the post of professor of Neurobiology at the Department of Medical Anatomy at UCLA. He now holds the post of professor at both UCLA and Drew Medical College, and is a world authority on the relationship between NK cells and cancer, stress and aging.

Studies into the efficacy in multiple myeloma, focusing on the activation of NK cells

Can you explain to me why you began to study approaches to multiple myeloma?

Ghoneum: I thought that NK cells, acting as an initial defence mechanism, might be activated by multiple myeloma more easily than on solid cancers, and that as BioBran acts directly on NK cells, it might cause them to show activity earlier and more clearly.

It is thought that the existence of a mass of cancer cells inhibits the activity of immune cells such as NK cells in the case of solid cancer. On the other hand, in blood cancer, cancer cells diffuse throughout the whole body, making it easier for NK cells to attack individual cancer cells.

What actions do you expect "BioBran" to have?

Ghoneum: The functions of "BioBran" can be roughly divided into two main areas: activating NK cells and inducing cancer cell apoptosis, directly or indirectly, and we have demonstrated these effects in several studies. We have also shown that adding "BioBran" to anticancer drugs is an effective way to work against multidrug resistant (MDR) tumour cells such as HL/60 AR.

A case where BJP became normal and the immunoglobulin synthesis function was recovered

Can you tell me about any cases in the present study?

Ghoneum: A male patient aged 58 felt strong pain from the fifth lumber vertebra to the first sacrum. His cumulative value for Bence-Jones protein excretion (BJP) in urine over 24 hours was 1,100 mg/day. Immunoelectrophoresis of urinary proteins was performed using antisera specific to IgG, bound Kappa and bound lambda light chains. The resulting free Kappa and free lambda chain proteins showed that the two discrete protein bands of 56.2% and 18.9% were monotypic free Kappa light chain proteins. Bone marrow aspiration showed 30% plasma cells.

This patient was on chemotherapy and radiation therapy, but his life expectancy was about 1 year. As his BJP stayed in excess of 100 mg/day and he had severe adverse reactions, his chemotherapy course was changed to "BioBran" alone at 3 g/ day.

What were the changes over time after starting "BioBran" ?

Ghoneum: His BJP value had decreased to 5 mg/dl fifteen months after the start of treatment with "BioBran" (Figure 1). His levels of IgG, IgA, and IgM serum immunoglobulin gradually increased. No characteristic monoclonal peak was observed, showing that normal immunoglobulin synthesis functions had been recovered (Figure 2).

Figure1 BJP Levels During BioBran Treatment

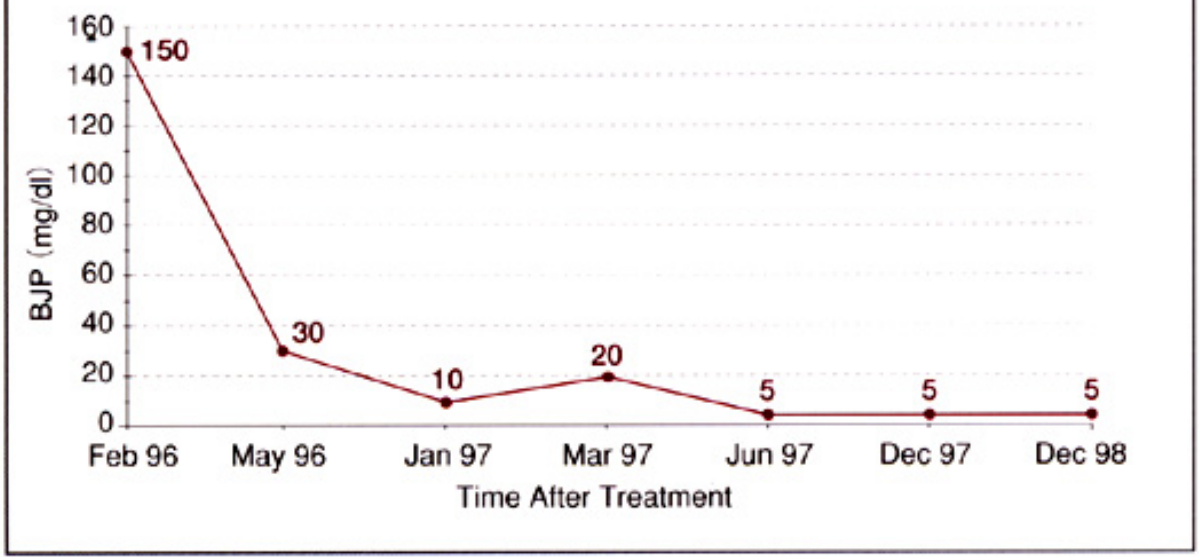
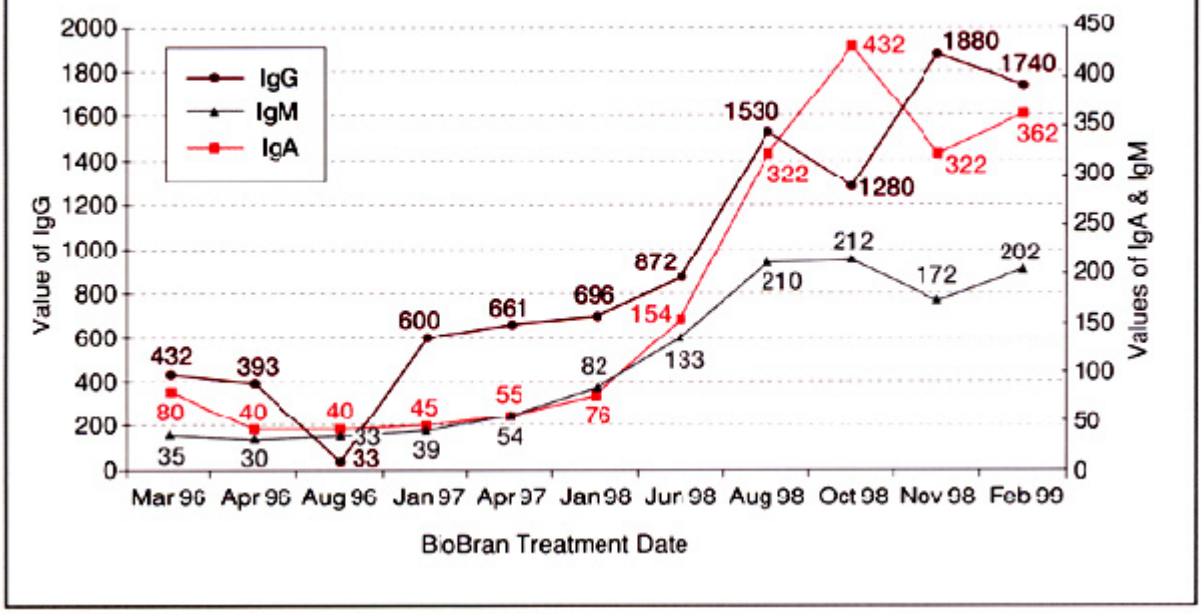


Figure2 Immunoglobulin Recovery During BioBran Treatment



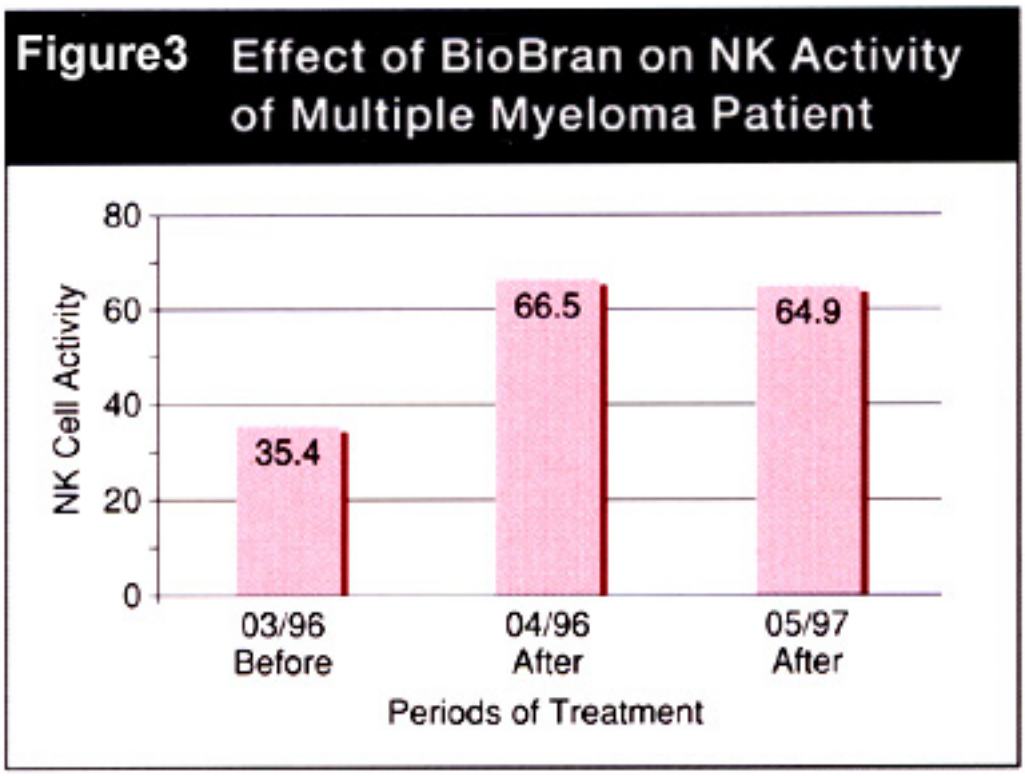
What do you think the mechanism which causes BJP to decrease is?

Ghoneum: The mechanism of action by which "BioBran" decreases BJP is not completely understood, but it may be related to the inhibition of B cells by activated NK cells. Previous studies have shown that the addition of NK cells to a B cell culture medium caused the production of antibodies to decrease, suggesting that NK cells inhibit the function of B cells.

A recent study has shown that this inhibition is associated with (1) the activation of NK cells, (2) a direct interaction between NK cells and B cells, and (3) interferon production by activated NK cells.

How did the NK cell activity change in this patient?

Ghoneum: His NK cell activity was 35.4 LU when chemotherapy was discontinued, but increased to 66.5 LU after two weeks of treatment with "BioBran". It has remained high since (Figure 3).



What were the results on prolonging life?

Ghoneum: The eleven other patients we studied had an average life expectancy of about 2 years, and this was almost doubled, to between 3.5 and 4 years. It was confirmed that the absolute number of cancer cells in the bone marrow decreased together with the fall in BJP.

The possibility of combination with other treatment, including radiation therapy

What do you think about the best timing for treatment with "BioBran"?

Ghoneum: In approaches to cancer, it is important to enhance the immunity of patients and improve their lifestyles, for example by reducing their stress or having them give up smoking. This applies to all types of cancer, and an earlier start increases the cure rate.

What do you think about the possibility of combining "BioBran" with chemotherapy?

Ghoneum: Chemotherapy alone cannot eradicate all cancer cells. Given this, if we consider many different combinations, this may lead to new cancer therapies. I think that a combination using “BioBran” to act on immunity is one of these ways, which can lead to more effective therapy.

Is there a possibility of combining "BioBran" with any other type of treatment?

Ghoneum: We already began to study combination of “BioBran” with radiation therapy. We are analyzing the results and obtaining data suggesting that it is effective. In the future, it is likely that more effective therapies will be found if it is combined with other treatments.

Thank you very much.

Address inquiries and requests for information about “BioBran” to:
Daiwa Pharmaceutical Co., Ltd.
Customer Response Centre: 0120-797-867
URL: www.daiwa-pharm.com
E-mail: info@daiwa-pharm.com