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Experience with Administration of BioBran in Patients with Chronic Rheumatism

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Abstract

The functional food, rice bran arabinoxylan derivative (BioBran), was administered for a long period to patients with chronic rheumatism given mainly symptomatic treatments with steroids, to evaluate its supplementary effect with representative treatments for rheumatism, such as steroids, analgesics, and thermotherapy. Steroids are essential for treatment of rheumatism, but it is desirable to minimize the dose, because they may cause adverse reactions. In recent years, there have been many reports on the functions of food ingredients, including superoxide scavenging and biophylaxis improving actions. This study evaluated the efficacy of BioBran, a functional food material. BioBran has been reported to have the effects of activating natural killer cells (NK cells) and inhibiting inflammation. The author confirmed and reported that it relieved cold symptoms in the elderly. The present study, where 8 patients with chronic rheumatism were given BioBran for 6 to 12 months, demonstrated the improvements of symptoms and QOL, suggesting its effectiveness.

Key words: Rice bran arabinoxylan derivative, rheumatism, supplementary treatment, and inhibition of inflammation

Introduction

Chronic rheumatism is a kind of autoimmune disease, where the IgG-type autoantibody, rheumatoid factor, and IgM in response to IgG are produced in synovial fluid and recognize each other to form an IgM-IgG complex, which induces inflammatory reactions. The immune complex activates complements, which promotes tissue destruction by attracting polymorphonuclear leukocytes and simultaneously activates basophils and platelets, stimulates release of histamine and serotonin, and increases vascular permeability, leading to further increase in immune complex deposition. Corticosteroids and nonsteroidal anti-inflammatory drugs are generally used in treatment of rheumatism. Immunosuppresants are also sometimes combined to inhibit the production of autoantibodies. Thus, patients are likely to experience adverse reactions. In this study, the rice bran arabinoxylan derivative (BioBran), a functional food with immunomodulatory and anti-inflammatory effects, was

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administered to evaluate its supplementary effect in drug treatment with steroids and analgesics.

Study method and clinical courses

BioBran, a derivative of hemicellulose contained in the rice coat, is a biological response modifier (BRM) that mainly consists of polysaccharide composed of arabinose and xylose[1]. Eight patients with chronic rheumatism were administered BioBran for 6-12 months to observe changes in their subjective symptoms and CRP and improvement in QOL. Five of 8 patients were on steroids and analgesics and the others on analgesics, Chinese medicines, and thermotherapy.

The clinical courses of 3 patients who responded well to BioBran will be reported below.

Case 1

Symptoms and treatments

A 78-year-old woman received regular treatment for osteolytic rheumatism from March 1998. The disease was classified as Stage IV in Class III by the Stein-Blocker classification.

The patient was orally given Predonine at 10 mg and Bucillamine at 200 mg/day as a symptomatic therapy. She had a severe pain and walking difficulty, and bone destruction was progressive. Artificial joint replacement was recommended, but postponed on her wish. After obtaining her consent, BioBran was administered from April 17. She had severe pain in both hands and knees and the joints, slept poorly, and was almost bedridden. Serological test results were ++ for RA test, 65 IU/ml for RF, and 2.0 mg/dl for CRP. The dose of BioBran was 1 g/day during the 1st week, 2 g/day for the next 3 weeks, and 3 g/day after that.

Clinical course

Pain in the hands and feet were relieved at 1 week of BioBran intake, and she was able to sleep well and walk using a walker. She had reduced pain in the knee and foot joints at 2 weeks and could walk with a cane at 1 month. In the serological test on October 5, the RA test result was +, RF 34 IU/ml, and CRP 0.6 mg/dl, and the steroid and DMARD were withdrawn. On January 4, 1999, the RA test was -, RF 14 IU/ml, and CRP 0.6 mg/dl, and the disease followed a good course (the normal range for RF was ≤20 IU/ml) (Figure 1).

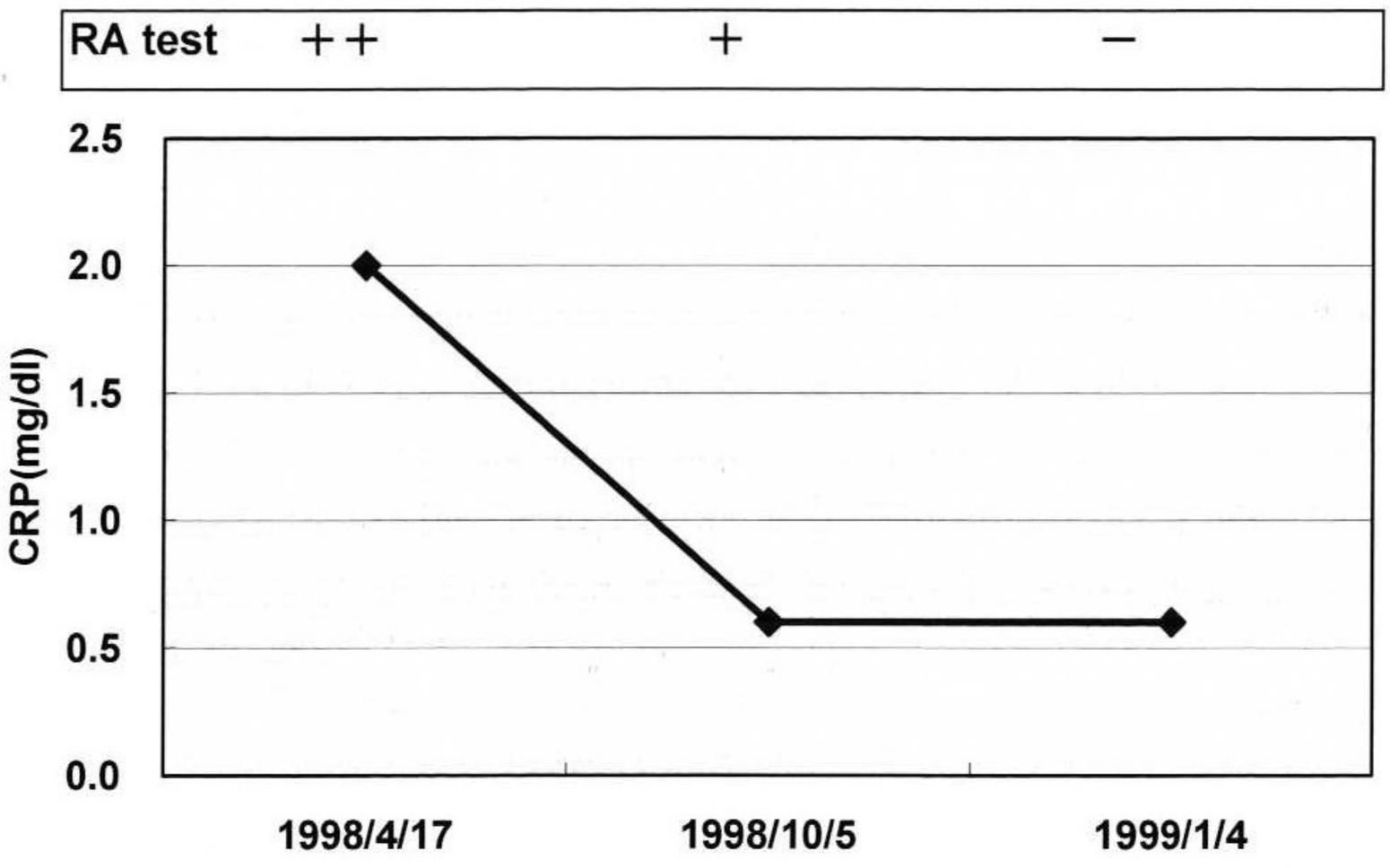

Figure 1 Changes in CRP and RA test

Case 2

Symptoms and treatment

A 77-year-old woman visited our clinic in March 2003. She had severe pains in the hand and foot joints, sleeplessness, and markedly reduced physical strength because of decreased appetite. The disease was classified as Stage IV in Class III. The RA test result was +++, RF 500 IU/ml, and CRP 1.8 mg/dl. She was diagnosed as having typical rheumatism. The steroid Predonine at 10 mg and a DMARD were given combined with thermotherapy, but pain persisted without any effect. Administration of BioBran at 3 g/day was started on June 20, 2000, and continued for 1 year, and then the dose was decreased to 2 g/day. She receives the therapy now.

Clinical course

Pain in the hands and feet were reduced at 3 days of administration of BioBran, and the patient was able to sleep and had increased appetite. At 3 months, pain in the hand and foot joints were further reduced, and she gained 2 kg. In late December at 6 months, the pain became endurable and test values improved: the RA test was ++, RF 62 IU/ml, and CRP 1.0 mg/dl. The steroid was withdrawn and only the DMARD was given. In June 2001, she still took BioBran at 2 g/day and symptoms were stable.

Case 3

Symptoms and treatment

A 39-year-old woman visited our clinic on June 10, 2000. A diagnosis of rheumatism was made and she was given steroid Predonine at 15 mg, an analgesic, Chinese medicine, and thermotherapy. BioBran was

administered from October 5. The dose was 1 g/day during the 1st week, 2 g/day for the next 1 month, and 3 g/day after that. The RA test result was ++, RF 320 IU/ml, and CRP 1.6 mg/dl.

Clinical course

Coldness in her hands and feet was reduced at 3 days of administration of BioBran, and the frequency of pain decreased. The pain was further reduced at 1 week, and the analgesic was withdrawn. Facial and hand swelling were reduced in early November at 1 month. At 3 months, she had almost no pain and could sleep well. The RA test result was +, RF 92 IU/ml, and CRP 1.0 mg/dl. The dose of the steroid was decreased to half the previous level. She had no pain and could bend both middle fingers freely in April 2001 at 6 months.

Results and discussion

BioBran had a very good effect on 3 of the 8 patients. Subjective symptoms, especially pain, improved, and the RA index and CRP level decreased. The steroid was completely withdrawn in 2 patients, and the dose was decreased in the remaining 1. Two other patients, in whom no very good effect was observed, had improved subjective symptoms. As a result, their QOL improved. The 3 remaining patients had no improvement or exacerbation in the 6-month administration period. Although symptoms were expected to worsen temporarily because of the immune-enhancing effect of BioBran, gradual increase of the dose caused no adverse reactions in any patient.

There are many reports on the actions of BioBran: NK-cell activation (Ghoneum et al.)[2], anti-inflammatory effect on a rat asthma model (Endo et al.)[3], survival improvement in an LPS-induced sepsis model (Kubo et al.)[4], intestinal-membrane protection against anticancer drugs in mice (Jacoby et al.)[5], protection against anticancer drugs in mice (Endo et al.)[6] and resistance to drug-related hepatic impairment (Sanada et al.)[7]. From these, BioBran could be estimated to be a functional food that enhances immunity and exerts a prophylactic effect based on the anti-inflammatory action. The authors conducted a double blind clinical study to evaluate the preventative effect of BioBran on the common cold syndrome in elderly people who stayed in the author-managed care institution and confirmed the effect of symptom relief[8]. BioBran showed the effect in a relatively short time in the patients of this study. These good results may have been because it exerted an anti-inflammatory effect on rheumatism and at the same time, enhanced immunity in the patients: it was reported that patients with rheumatism are generally immunocompromised because of decreased lymphocyte counts[9].

Conclusion

These results suggested the efficacy of BioBran as a supplement therapy. The main mechanism of the action is considered relief of immunological inflammation. We will try this therapy further, because it caused no adverse reactions.

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