

Application of Modified Arabinoxylan from Rice Bran (BioBran/MGN-3) to the Prevention and Supplementary Treatment of Diseases

Kenji TAZAWA

Professor Emeritus, Toyama Medical and Pharmaceutical University

Chemotherapy and radiation therapy are effective in cancer treatment, but, as is well known, they are double-edged swords that also damage the body. Pharmaceutical products that cause fewer adverse reactions and maintain QOL have also been developed and are used in the treatment of cancer. However, the highest priority has been given to curing the cancer, and insufficient care is taken to prevent the deterioration of the body's physiological functions. Although there are many health professionals who place importance on the relationship between the prevention of cancer, lifestyle-related diseases and food functions and put this into practice, there are few doctors interested in the benefits of food, at least in the context of cancer treatment. Having doubts about cancer treatment with anti-cancer drugs alone, the present author conducted the following experiment. In a rat model of sepsis induction produced by treating rats with methotrexate, the effect of water-soluble dietary fibre was examined. It was found that dietary fibre acted to prevent sepsis, and a scavenger-like effect was also suggested, indicating the possibility that portal blood was purified by the dietary fibre. We conducted experiments based on this result, and obtained a result that showed that liver metastasis was inhibited by intake of dietary fibre. In other words, cancer could be controlled by dietary fibre.

We surgeons usually prescribe several days of fasting after surgery for gastrointestinal diseases, and then give an easily absorbed, high-nutrition liquid diet followed by thin rice gruel, whose consistency is gradually increased. In contrast, indigestible food containing dietary fibre has been excluded, for the reason that this type of food is a burden to the gastrointestinal tract. However, this works against attempts to purify

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the portal blood, and our experiments show that this approach may promote the liver metastasis of cancer.

Several years later, an American research group gave a presentation on a surprising result from a study, which was delivered at an international academic conference on colorectal medicine held in Sweden. They reported that the intake of food containing dietary fibre immediately after surgery had no adverse effect, but in fact rather accelerated postoperative recovery because the bacterial flora was rapidly restored to its state prior to the operation, supporting our experimental result, which showed the possibility that this could inhibit metastasis. The American group's study result suggests that food ingredients are likely to have a therapeutic influence in the treatment of diseases, especially cancer; it implies that dietary fibre improves the intestinal flora, purifying the portal blood, and resulting in improvements in liver function. I believe that this mechanism can eventually lead to enhanced biological defence and spontaneous recovery from cancer.

In basic studies, BioBran/MGN-3 has been shown to exert an immunomodulatory action and improve biological defence mechanisms. The present author confirmed the ability of BioBran/MGN-3 to scavenge reactive oxygen species, and its action in eliminating superoxide anion radicals and hydroxyl radicals in an *in vitro* test, and reported that it might enhance biological defences. Researchers engaged in basic studies of BioBran/MGN-3, including the author, have great interest in its effect on the clinical prevention and supplementary treatment of diseases. The food ingredient has no direct effect on disease, but contributes to its prevention and improvement, by maintaining and increasing biofunctions. Because of this, it is very difficult to evaluate its efficacy and express the results quantitatively. At present, the only way to do this is by following the current evaluation procedure for the efficacy of pharmaceutical products. Given this, clinical trials for BioBran/MGN-3 were conducted and valuable data was obtained. The author performed a double-blind study to evaluate its effect on the prevention of the common cold syndrome in elderly individuals. We confirmed that BioBran/MGN-3 compensated for the decreased ability to prevent infection due to aging and improved cold symptoms by reducing inflammation.

As there are many restrictions on clinical trials of food ingredients in cancer patients, it is difficult to conduct studies for objective assessment, such as double-blind trials. There is therefore no other choice but to accumulate case studies. The author does not believe that cancer treatment can be evaluated by statistically significant differences alone. From the mechanism of food function, it is natural that the onset of effects will vary greatly between individuals because each one has a different nutritional status. It is meaningful to evaluate effects over the long term through observation of clinical course in the same individual in addition to making comparisons between patients. I hope that the future accumulation of more data will lead to the development of effective applications of BioBran/MGN-3 in man.