

Postscript

Our health, namely homeostasis, is maintained mainly with foods. Immunity plays an important role in vital defence, which is an important factor in homeostasis. Foods are roughly divided into staples and other foods. Staples are defined as foods that are taken in large amount and provide an energy source while other foods help the ingestion of staples and supplement nutrients. For grains used as staples, emphasis has usually been placed on primary and secondary functions but not on tertiary functions. Over the last 100 years, one of the largest changes in dietary habit has been the polishing of grains to improve the taste. Before then, humans ate whole wheat and unpolished rice, when they may have had an intestinal bacterial flora composition very different from that of modern people. It seems likely that the past flora contained various bacteria able to utilise indigestible components found in the part of the grain that is no longer eaten. Such bacteria accounted for a larger proportion of bacterial cells and produced useful substances with tertiary functions from the indigestible components within the large intestine. It is possible that some of them played a role in the maintenance of immunocompetence.

BioBran/MGN-3 is a polysaccharide complex obtained by partial hydrolysis of hemicellulose, a dietary fibre from rice bran, with a carbohydrase absent in humans. Different from cellulose, hemicellulose has a complex molecular structure. Hemicellulose can give rise to various heteroglycans on partial hydrolysis. We found that the obtained hydrolysis product has such a strong physiological effect that it cannot be thought of as derived from natural foods. The active component was found clarified to consist of several polymer fragments with relatively high molecular weights derived from hemicellulose. We cannot simply conclude that the ingestion of rice bran or unpolished rice can enhance immunocompetence, because it is difficult for modern people to eat rice bran or unpolished rice every day and it is unknown how long ingestion of unpolished rice would be required to change our intestinal flora to that able to utilise hemicellulose. However, the development of BioBran/MGN-3 suggested that the ingestion of whole grains provides functions in addition to those typical of staple food. Grains recognised as food materials with tertiary functions await the development of processing techniques that enable the ingestion of whole grains including seed coats that develop tertiary functions while retaining a good flavour. Many researchers and doctors cooperated and provided guidance during the development of BioBran/MGN-3 and the confirmation of its safety and efficacy. Through their efforts, it has been demonstrated that BioBran/MGN-3 has both immunomodulatory and anti-inflammatory actions and contributes to the maintenance of homeostasis. I would like to express my gratitude to them and hope that this book can help health professionals to recognise food functions.

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BioBran/MGN-3 (Rice bran Arabinoxylan derivative)
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