

Study on the Application of Dietary Fiber on Special Medicine

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Abstract. Formulated foods for special medical use play a pivotal role in the nutritional support and nutritional treatment of clinical patients such as diabetes, cancer, kidney disease, liver failure, and gastrointestinal tract malabsorption. The core problem of special population is digestion and absorption. The intestinal health and intestinal micro-ecological balance play a key role in the digestion and absorption of nutrients. Dietary fiber, especially soluble dietary fiber, regulates intestinal flora and maintains intestinal micro-ecology. It plays an important role in balancing, promoting the health of the digestive tract, lowering blood lipids and cholesterol, improving immunity, and promoting the absorption of mineral elements. It plays an important role in the development of special medical foods and clinical enteral nutrition therapy.

Keywords: Dietary Fiber, Special Medicine, Application Study

1. INTRODUCTION

Special medical use formulas are specially formulated to meet the daily nutritional needs of people with limited food intake, digestive dysfunction or metabolic disorders, or to meet the special needs of certain nutrients or diets for a certain medical condition or disease population. The food must be used under the guidance of a doctor or clinical nutritionist. It can be used alone or in combination with ordinary foods or other special dietary foods. According to relevant information, the current global market for special medical foods is about 560-640 billion yuan, growing at an annual rate of about 6%. Among them, the market size and growth rate of North America, Europe, and Japan are 2.7 to 30 billion yuan, respectively, a growth rate of 3%, a growth rate of 1.25 to 15 billion yuan, and a growth rate of 5% to 100 to 12 billion yuan. China's special medical food market has developed rapidly in the past few years, with an average growth rate of 37%, but the market is still in the early stage of development, and its scale is comparable to that of the Hong Kong market, which is only about 600 million yuan, equivalent to 1% of the world.

2 THE IMPORTANCE OF SPECIAL MEDICAL FOODS

Food for special medical uses is important for patients. Many patients who are hospitalized for surgery will focus on the surgeon and the surgical procedure, often ignoring preoperative preparation and postoperative care, especially clinical nutrition. In fact, in many cases, foods for special medical use have important clinical significance for patients, which can correct the complications such as metabolic imbalance, reduce infection, enhance the effects of various treatments, and promote rehabilitation, thereby shortening the length of hospital stay, It has important clinical significance to improve the quality of life of patients.

Food for special medical uses is also one of the means to reduce medical expenses. The Brazilian Ministry of Health has conducted a health economics assessment. The result of the assessment is that for every \$1 spent on nutritional support, the overall cost of treatment can be reduced by 8 yuan. At the same time, a global clinical trial conducted by several companies, such as Abbott, Baxter, Brown, and Nestle, also confirmed that nutritional support has greatly reduced the cost of inpatients.

3 INTESTINAL HEALTH IS IMPORTANT FOR SPECIAL DIETARY GROUPS

The intestine is the most important digestive organ and peripheral immune organ of the human body. At present, people are fully aware of the importance of the intestines on the basis of new research, and put forward "If the gut works, use it", the integrity of the gastrointestinal function is The gold standard for enteral nutrition preparations is chosen. Therefore, when determining the nutritional mode of the patient, enteral nutrition should be preferred when there is intestinal function, and it should be implemented as much as possible. This has become the consensus of many clinicians.

The normal intestinal flora plays an important role in the construction, maintenance and destruction of the intestinal barrier, which is closely related to the balance of intestinal micro-ecology. Therefore, maintaining the integrity of the intestinal barrier function from the perspective of intestinal micro-ecology has important clinical significance : (1) rational application of antibiotics to protect the membrane barrier function; (2) reduce bacterial translocation and clinical infection (3) Supplementary medical probiotics can help restore intestinal micro-ecological balance, repair intestinal flora barrier, inhibit excessive growth of exogenous potential pathogens (PPMOS), reduce intestinal toxin production, and promote intestinal epithelium Mucin secretion and secretion of immunoglobulin (IgA), regulate systemic immune function; (4) supplementation of prebiotics, on the one hand can promote the growth of beneficial bacteria in the intestine, inhibit the production of harmful metabolites; on the other hand, through the production of short chains Fatty acids promote intestinal peristalsis and accelerate intestinal bacteria and toxins. (5) The improvement of intestinal micro-ecology can better promote the digestion and absorption of nutrients and improve malnutrition.

The intestine is the most important digestive and absorbing organ and peripheral

immune organ of the human body, and it is also one of the most important organs of the human body. At present, people fully recognize the importance of the intestine on a new basis, and propose that the integrity of the gastrointestinal function is the gold standard for the selection of enteral nutrition preparations. Therefore, when determining the nutritional mode of the patient, enteral nutrition should be preferred when there is intestinal function, and it should be implemented as much as possible. This has become the consensus of many clinicians. The normal intestinal flora plays an important role in the construction, maintenance and destruction of the intestinal barrier, which is closely related to the balance of intestinal micro-ecology. Therefore, maintaining the integrity of the intestinal barrier function from the perspective of intestinal micro-ecology has important clinical significance: rational application of antibiotics, protection of membrane barrier function; reduction of bacterial translocation and clinical infection; supplementation of medical probiotics, help to restore intestinal The micro-ecological balance regulates systemic immune function.

4 THE IMPORTANCE OF DIETARY FIBER FOR MAINTAINING A NORMAL INTESTINAL BARRIER

In the past 20 years, dietary fiber has been regarded as one of the most important enteral nutrients in the clinic and is widely used in clinical practice. In recent years, clinical enteral nutrition treatments have increasingly selected formulations containing dietary fiber. By 2006, the enteral nutrition formula containing dietary fiber has reached about 60%, and it is increasing year by year. Dietary fiber can be divided into soluble and insoluble dietary fiber. Insoluble fiber can increase stool volume and accelerate intestinal peristalsis. Soluble fiber can delay gastric emptying. What is more meaningful is that soluble fiber is anaerobic in the colon to produce short chain. Fatty acid (SCFA), while SCFA (acetate, propionate, butyrate) is the main energy-supplying substance of colonic mucosal cells, while SCFA has a nutrient-stimulating effect on the small intestine and colon mucosa, which can reduce mucosal atrophy. Promotes the growth of residual intestinal tract after extensive intestinal resection, and SCFA can promote the reabsorption of water and sodium by colon, which has clinical significance for preventing diarrhea. Some soluble dietary fibers have prebiotic effects, such as polydextrose, which, in addition to insoluble dietary fiber, significantly increase fecal volume, enhance laxativeness, reduce the risk of intestinal cancer, and have insoluble dietary fiber or Insignificant physiological functions, such as low energy; non-insulin dependent, can significantly reduce postprandial blood glucose levels; lower triglycerides and significantly lower serum cholesterol; have significant stimulating effect on intestinal bifidobacteria, except for the youth bifid Bacillus, Bifidobacterium longum, etc. have a proliferative effect, but also have a proliferative effect on Bifidobacterium infantis. Polydextrose can reduce the rate of glycolysis, so that the regulation can be maintained at the end of the colon, which can significantly maintain the intestinal micro-ecological balance.

As a prebiotic, oligofructose has the same characteristics as water-soluble dietary fiber and is currently widely used in food development for special medical

applications. In the large intestine, oligofructose promotes the growth and reproduction of a few beneficial bacteria such as bifidobacteria, and can significantly inhibit the reproduction of harmful bacteria, improve intestinal micro-ecology, and promote the health of the digestive tract. At the same time, it also improves lipid metabolism. It lowers blood lipids and cholesterol, improves immunity, inhibits and prevents tumors, and promotes the physiological effects of absorption of mineral elements such as calcium and magnesium. These are physiological functions that cannot be replaced by insoluble dietary fibers, and their development and clinical use in special medical uses. It plays an important role in enteral nutrition therapy. In 1990, Spaeth G et al. people through animal experiments, compared with the dietary fiber group, total parenteral nutrition and single pectin group mesenteric lymph node bacterial culture positive rate was significantly increased (indicating intestinal bacterial translocation), and Cellulose, corn, and Kaolin (with dietary fiber) did not change much, confirming that enteral nutrition with dietary fiber helps maintain the intestinal barrier and prevent bacterial displacement. M. Elia et al., "Systematic review and meta-analysis - Clinical application and physiological effects of enteral nutrition preparations containing dietary fiber", incorporating enteral nutrition supplements with dietary fiber in adults and children as the main A total of 51 studies were enrolled in a controlled study with at least 3 days of nutrition. Of these, 43 were randomized controlled trials, 38 were studied in nearly 1600 patients, and 13 were studied in 171 healthy volunteers. . Indicators for evaluating clinical outcomes: number of diarrhea and constipation, nature and texture of stool, gastrointestinal symptoms, total intestinal transit time, amount of feces, and number of bowel movements. The results showed that dietary fiber can significantly reduce the number of patients with diarrhea and constipation, improve the intestinal function of patients, high safety and good tolerance.

5 MARKET PRODUCTS AND APPLICATIONS

Huarui Ruineng: a high-fat, high-energy, low-carbohydrate enteral total nutrient preparation, especially suitable for the metabolic needs of cancer patients, including protein 18%, fat 50%, carbohydrate 32%, dietary fiber 1.3g/100mL, dietary fiber helps maintain gastrointestinal function. Huarui Ruixian: It can be used as a source of all nutrients or nutritional supplements for patients who cannot eat normally, especially those who cannot tolerate large-volume feeding or need high energy. It is rich in dietary fiber and is beneficial to maintain the intestinal structure of patients. And features for long-term applications. Huarui Ruidai: special enteral nutrition preparation for diabetes and stress hyperglycemia, high dietary fiber formula, helps to stabilize blood sugar levels and maintain gastrointestinal function.

Full capacity: Dietary fiber: 2.2g/100mL, suitable for patients with limited fluid intake, cardiopulmonary insufficiency, renal insufficiency, brain trauma, cerebral edema, patients in high metabolic state, severe infection, trauma and burns, etc. Stress condition. Glucerna SR: A 20% protein, 32.6% fat, 47.5% carbohydrate, M U F A rich, low electrolyte, 0.76 g/100 mL dietary fiber. Lishikang homogenate (fibrous type): balanced, whole nutrient homogenate formula, high protein content,

added Gln, high dietary fiber content. Nestlé Dietary Fiber: Contains a scientific combination of dietary fiber to promote intestinal health. It can be used as the sole source of nutrition for critically ill patients, meet all daily nutritional needs and help them recover quickly. It can also be used as a nutritional supplement for daily diet to enhance physical strength. .

Since the 1990s in the last century, the growth of social economy and the development of material civilization, some "civilized diseases" - various malignant tumors, hyperlipidemia, hypertension, arteriosclerosis, diabetes, obesity are on the rise, threatening Everyone's health is healthy. The formation of an aging society, a fast and fast-paced lifestyle, the presence of a large number of sub-healthy people, and a variety of specific physiological stages have special needs for food nutrition. This gives special missions to special dietary foods and will also stimulate the development of special medical foods in China. (1) The use of nutrients to achieve the role of drug treatment, not just nutrition. (2) Preventive nutritional support, that is, start nutritional support before elective surgery. (3) Develop special medical use foods that are scientifically reasonable for the specific disease, meet the daily nutritional needs of the target population, and can meet the special requirements for certain nutrients due to specific diseases, metabolic disorders and medical conditions. (4) Development of special foods for diabetes. That is, foods that are strictly controlled by heat, rich in high-quality protein and carbohydrates, low in fat, high in fiber, free of low molecular weight sugars, high in cellulose and minerals, and active substances. (5) Special diets for specific populations at specific physiological stages are one of the main development directions. Such as malnourished food suitable for the elderly: foods rich in dietary fiber, protein, mineral elements, vitamins, low calorie, low fat, low cholesterol, low sodium salt; foods suitable for children's growth and development; suitable for pregnancy, lactation Food.

6 CONCLUSION

With the economic growth and the improvement of people's living standards and the special medical foods and nutritional treatments gradually accepted by special dietary groups, the most important is the introduction of laws, regulations and related rules for special medical use formulas, production, circulation, Supervision will be law-abiding, and in the next few years, it will be an important period for the rapid development of China's special medical use food.

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