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ENTEROSAN PROBIOTICS: PROTECTING THE HEALTH OF MODERN MAN

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ABSTRACT

The main factors affecting the balance of the gastrointestinal microflora and its influence on the normal functions of other organs and systems in the human body were examined. Probiotics are commonly defined as viable microorganisms (bacteria or yeast) which, when ingested, have a beneficial effect on the recipient's health. They are used in foods, especially in fermented dairy products, but also in pharmaceutical preparations. The beneficial effects of probiotic microorganisms on human health, e.g. immune stimulation and prevention of gastrointestinal tract infections, lactose maldigestion, constipation, colonic disorders, some side effects of pelvic radiation and chemotherapy, and more recently, food allergies induced by hypersensitivity to milk and changes associated with colon cancer were established in the course of numerous clinical trials. The influence of the Enterosan probiotics on diseases caused by disbalance of the gastrointestinal microflora was demonstrated.

Introduction

According to Fuller (5), probiotics are biopreparations containing living cells or metabolites of stabilised autochthonous microorganisms that optimise the gut microflora colonisation and composition in both animals and humans and have a stimulative effect on the host's digestive processes and immunity. Probiotics are effectively being used in the food industry, agriculture, and human and veterinary medicine (7, 10).

Despite the extensive knowledge that has been accumulated, the action of probiotics has not been fully explained yet. Their inhibitory effect on pathogens may be expressed through the synthesis of metabolites which suppress the growth of pathogens, push them out of the intestinal tract and thus stimulate the immune system (8).

Probiotics are normal inhabitants of the intestinal tract which are already adapted to the digestive systems (11). Some particularly desirable effects described for various intestinal lactic acid bacteria are their anti-pathogenic action, the strengthening of the

gut mucosal barrier (9), their anti-allergic effects (Majamaa, Isolauri, 1997), anti-mutagenic and anti-tumorigenic activity (6).

The anti-tumor effect of probiotics may be achieved through the inhibition of tumor cells and the suppression of bacteria producing β -glucosidase, β -glucuronidase, and azoreductase which catalyze the conversion of procarcinogens to proximal carcinogens as well as through the decrease in the nitroreductase activity involved in their synthesis. Probiotics affect the blood cholesterol level by inhibiting the cholesterol synthesis or directly reduce it by assimilation (12).

Probiotic preparations are usually mixtures of lactobacilli and bifidobacteria, although yeasts such *Saccharomyces* have also been used. They should contain one to ten billion viable probiotic organisms in order to achieve a preventive effect (3).

The Problem

People's lives are closely interrelated with

TABLE 1

In cases of infections of the gastrointestinal tract

Enterosan (basic)	In cases of diarrhea, dysbacteriosis, gastrointestinal infections (colibacteriosis, salmonellosis, dysentery), meteorism and hyperacidity, digestive system disorders, menopausal problems.
Enterosan Forte	For blood cholesterol reduction, regulation of the fat metabolism, removal of fat bodies from the liver walls.
Enterosan ABB 2000	In cases of chronic gastritis, gastroduodenal ulcer.
Enterosan Bulgaria	For polyps, after surgical interventions, after radiation and chemotherapy.

TABLE 2

Enterosan Probiotics for the endocrine system

Enterosan D – for adults	For children and adults suffering from diabetes, for reduction of the blood sugar level, for more efficient insulin utilisation and protection of the cardiovascular system against atherosclerosis.
Enterosan D – for children	
Enterosan -T	In cases of thyroid gland dysfunction, neuroses, psychoses, etc.
Enterosan -P	Helps the cholesterol reduction in the organism and prevents prostate enlargement. Recommendable for people suffering from hypertrophy of the prostate gland and for recovery after surgical interventions.

and influenced by various environmental factors. The stress and mental strain affect the functions of the endocrine glands and the gastrointestinal microflora balance. The coordination between the endocrine and the hormonal system changes, disorders occur in the metabolism, the balance of the microflora in the stomach and intestines is disturbed and as a consequence the organism's health declines. The symptoms may be in the form of increased or decreased intensity of the metabolic processes, an increase or decrease in the body mass, digestive tract disorders, etc. In the event of insufficient or inadequate nutrition there is also a lack of microelements essential to the normal functioning of the thyroid gland, the pancreas and other glands. This in turn leads to changes in the synthesis of enzymes and hormones which play a major role in the metabolism of carbohydrates, lipids and proteins. As a result, there is a growing number of people suffering from disorders of the endocrine glands, diabetes, high blood cholesterol level, dysfunctions of the digestive, cardiovascular and immune systems.

Enterosan Probiotics

Lactobacilli and bifidobacteria are the main gastrointestinal microflora regulators. They can adhere to the intestinal mucosa, reproduce in the stomach and intestines, synthesise lactic, acetic and other organic acids and bacteriocins through which they change the growth conditions of pathogens, including the *Helicobacter pylori* gastric pathogen, and toxigenic bacteria and push them out of the colon.

On the basis of selected strains of lactobacilli (*Lactobacillus acidophilus*, *Lactobacillus delbrueckii* ssp. *bulgaricus*, *Lactobacillus casei*, *Lactobacillus plantarum*) and bifidobacteria (*Bifidobacterium bifidum*, *Bifidobacterium breve*, *Bifidobacterium longum*, *Bifidobacterium infantis*), four groups of Enterosan probiotics have been developed: probiotics for the digestive system (**Table 1**), probiotics for the endocrine system (**Table 2**), probiotics for functional usage (**Table 3**), and probiotics for deficiency disorders (**Table 4**). The probiotics of the Enterosan series contain over 10 billion active lactobacillus and bifidobacterial cells, microelements and vi-

TABLE 3

Enterosan Probiotics for functional usage

Enterosan - K	In cases of inflammations of the urinary tract or the renal system, renal calculus, and during recovery after surgical interventions. Protects the organism against renal calculus recurrence.
Enterosan Verucaacid	Intended for the removal of warts.
Enterosah S-V	For fungal vaginal infections.
Enterosan S-2	Anti-fungal.
Enterosan 44	Designed for children and adults suffering from allergy and Krown's disease. Strengthens the capillaries, impedes the penetration of allergens and curbs their influence on the organism;
Enterosan 47	Reduces blood pressure, regulates the cholesterol levels and improves the function of the cardiovascular system by aiding the organism in the protection from heart attacks and strokes;
Enterosan 55	Protects the liver from the influence detrimental substances and helps the recovery of the damaged liver cells. Stimulates the liver and gallbladder function and prevents gallstone development. Enterosan 55 has a favourable effect on cirrhosis and reduces the ammonia levels in the bloodstream.

TABLE 4

Enterosan Probiotics for deficiency disorders

Enterosan Osteo	Suitable for people suffering from osteoporosis. Prevents calcium resorption by the bone mass.
Enterosan V	Recommendable for people suffering from osteoporosis, arthritis and Parkinson disease. Prevents calcium resorption by the bone mass. Stimulates growth and strengthens the bones. Enterosan V relaxes the strained muscles and reduces the tremor of the limbs.
Enterosan MS	Prevents cramps, improves agility and the overall physical condition. Suitable for people suffering from multiple sclerosis.
Enterosan 42	Stimulates the formation of red corpuscles by the bone marrow. Overcomes the anaemic conditions of the organism.
Enterosan S-1	Helps overcome mental stress and depression during sexual contact. Stimulates erection, semen formation, sperm activity and potency.
Enterosan Parmal	Recommendable for epilepsy. Controls the epileptic seizures and prevents convulsions.

tamins. The lactobacilli and bifidobacteria selected and included in the probiotic supplements are capable of reproducing under the conditions in the stomach and the intestines, and of forming lactic acid and bacteriocins through which they suppress the putrefactive and pathogenic microorganisms that cause enteric infections, food poisoning, meteorism, etc. Thus the gastrointestinal microflora balance is regulated and the organism is protected against the occurrence of fungal infections.

The microelements and vitamins in the composition of the Enterosan probiotics

contribute to the reduction of the negative effects of stress and mental strain upon the organism. They normalise and sustain the functions of the thyroid gland and the pancreas as well as the action of the enzymes and hormones synthesised by them.

The high concentration of viable active cells in Enterosan (exceeding 10 billion cfu/g) provides the organism with the necessary quantity of microorganisms. The addition of biologically active forms of microelements and vitamins enables the probiotic food supplements to perform their preventive and remedial action. The high

microbial lactobacillus and bifidobacterial content of the probiotic food supplements of the Enterosan series maintains the balance of the gastrointestinal microflora. Owing to the addition of biologically active forms of microelements and vitamins, the Enterosan probiotics have a specific action and dosage with respect to different diseases.

Probiotic supplements "Enterosan" are successfully used to reduce the negative effects of risk factors on the organism, to normalise and sustain the function of the endocrine glands and to balance the gastrointestinal microflora. They are characterised by a high concentration of viable active cells of lactobacilli, lactococci, bifidobacteria and products of their metabolism, vitamins and microelements. Their intake allows regulation of the microflora in the stomach and the intestines, suppression of the putrefactive process, reduction of the bilious products and cholesterol in the first place, and termination of the continuous intoxication of the organism by microbial toxins, amines and their putrefactive products.

The vitamins and microelements present in their biologically active form in the composition of probiotic food supplements afford an opportunity for protecting and recovering the functions of important enzyme systems which support the synthesis and action of the hormones produced by the endocrine glands (insulin, L-thyroxine, etc.).

The selected lactobacilli, lactococci and bifidobacteria combined with vitamins and microelements such as magnesium, zinc, iron, chromium, organic acids and amino acids allowed the development of probiotic supplements which could be used to normalize the gastrointestinal tract microflora, purge the organism of the toxins and putrefaction products, reduce the cholesterol and blood pressure levels, improve the function of the cardiovascular system and thus help heart attack and stroke prevention. They are applied to diabetics, people with thy-

roid gland disorders, people suffering from prostate gland enlargement, anaemia, allergy and epilepsy.

Microelements in organic form, vitamins and symbiotic strains of lactobacilli and bifidobacteria, as well as the products of their metabolism prevent liver cell damage and help the already damaged liver walls recover. Thus the content of a number of microelements is regulated and their concentration in the bloodstream can retain the levels needed by the organism. This stops the process of their utilisation by tissues and bones and the formation of insoluble salts. In addition, microbial cells strengthen the intestinal mucous membrane, hinder the absorption of toxic substances and the admission of pathogenic microorganisms into different organs and systems thereby protecting the organism against infections.

Clinical tests

The Enterosan probiotics were subjected to clinical tests at the Medical University in Plovdiv, St. Panteleymon Medical Center in Plovdiv, Tsaritsa Yoanna University Hospital in Sofia, the Multifunctional Active Treatment Hospital in Plovdiv, the Multifunctional Active Treatment Hospital in Dobrich, the Medical University in Stara Zagora, the Infectious Clinic of the Medical University in Plovdiv, the Paediatric Clinic at the Medical University in Plovdiv, the BELPAPO Infectious Clinic in Minsk, Belarus, the Republican Chemotherapy and Chematology Centre in Minsk, Belarus. The positive effects of the Enterosan probiotics on the human organism were reported by prominent medical experts at the International Scientific and Practical Conference 'Enterosan Probiotics: Technologies and Health 2002'

The world nowadays is returning to the natural means of preventive healthcare. Within that context, the Enterosan probiotics are reliable therapeutic and prophylactic preparations for the protection of modern man's health.

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