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Beneficial effects of the new synbiotic dairy product NAR on human beings

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Intestine is considered to be one of the important immunological organs and intestinal microbiota plays an important role in formation of immune system. It is known that a probiotics is capable to modulate immune reactions, at the basis of these effects are influence on cytokine production, phagocytic activity, production of antibodies and natural killers. However, the mechanism of immunomodulatory activity is various, is more often strain specific, but also can depend on other components of a preparation and certainly the initial immune status of a macroorganism. A normal metabolism *in vivo* produces the active free radicals such as superoxide radicals, hydroperoxide and hydroxyl radicals, also an active oxidant and source of radicals such as hydrogen peroxide. Free radicals cause lipid peroxidation in cell membranes and lipoproteins. Oxidative damage of lipoproteins with low molecular weight plays an important role in development of pathological processes such as arteriosclerosis, cancer and rheumatoid arthritis. Therefore, the natural antioxidant system of human body needs a continuous supply of substances in the body in order to maintain the necessary work effectively. One source of antioxidants is probiotic products, about its positive protective effect reported by several authors. The purpose of this research was to study the total antioxidant activity of synbiotic, mechanism of action and immunomodulatory activity, the total antioxidant activity, mechanism of action and cholesterol-lowering action of a new synbiotic product *in vitro*.

Results: We investigated the immunomodulatory, antioxidant and cholesterol-lowering properties of synbiotic product of NAR, which comprises Streptococcus thermophilus, Lactococcuslactis, Lactobacillus plantarum, Lactobacillus fermentum, Lactobacillus acidophilus, Bifidobacterium longum, Bifidobacterium bifidum probiotics, pectin, collagen and inulin. The new product is made from natural milk, the name of the product in Kazakh language means "nutritious". The synbiotic product "Nar" changes cytokine profile towards Th-1. Our study showed a high level of total antioxidant activity of the synbiotic product (67.4 mmol /ml). This figure exceeds the activity of intact cells of the consortium (15.3 mmol/ml), on the basis of that the symbiotic was created several times. One of the mechanisms of radical's inactivation of anti-oxidative stress by bacteria is the expression of SOD. Analysis revealed the superoxide dismutase activity of synbiotic (1.42 U/mg of protein). Glutathione reductase activity of synbiotic product was high and amounted to 0.0631 U/ml.

Conclusion: Thus, in the case of saturation of blood cells by the synbiotic product NAR prevails mediators with proinflammatory function, activating a cellular resistance component, which is important at the first level. Examined synbiotic NAR has a high antioxidant activity (67.4 mM/mL), greater than the activity value of the intact cells of the consortium (15.3 mM/ml), on the basis of that the symbiotic was created several times. One of the mechanisms of radical's inactivation antioxidative stress of bacteria is the expression SOD. Analysis revealed the superoxide dismutase activity of synbiotic (1.42 U/mg of protein). Glutathione reductase activity of synbiotic product was high and amounted to 0.0631 U/ml. Thus synbiotic NAR fermented with probiotic consortium (Streptococcus thermophilus, Lactococcus lactis, Lactobacillus plantarum, Lactobacillus fermentum, Lactobacillus acidophilus, Bifidobacterium longum, Bifidobacterium bifidum), has a high antioxidant and cholesterol-lowering activity.

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