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SOME PROBIOTIC CHARACTERISTICS OF A FERMENTED MILK PRODUCT BASED ON MICROBIC ASSOCIATION «TIBETAN KEFIR GRAINS»

Milk supplements based on Tibetan Kefir Grains (TKG) that mentioned in local Ukrainian sources as *Lactomyces tibeticus* – culture association of microorganisms which have significant interest as food fermented product, due to wide range of biologically active compounds, relatively simple cultivation and possibility of maintaining the culture active for a long time.

Tibetan kefir, which is used in China, is composed of *Lactobacillus*, *Lactococcus*, and yeast. Additionally, acetic acid bacteria have been identified in Tibetan kefir, depending on the region in China from where it was obtained. Moreover, Tibetan kefir composition is different from Russian, Irish, Taiwan kefir, Turkey fermented beverage with kefir; however, it is known that this microbial diversity is responsible for the physico-chemical features and biological activities of each kefir. It can be assumed that regional differences and cultivation conditions can strong change microbial diversity of microbial natural association of Tibetan Kefir Grains.

TKG that cultivate in Ukrainian household (UTKG) looks like a white lump of 3-6 mm (young fungus) and up to 3.5 cm (before division), with no particular smell. Some probiotic properties of this fermented product were analyzed, and it allow to determine the obtained fermented milk product as a functional drink with therapeutic properties. Especially, the effect of TKG microbiota on the growth of pathogenic microbiota and sensitivity to antibiotics is studied herewith. It is found that the test-cultures of opportunistic pathogens (*Staphylococcus aureus*, *Bacillus mesentericus*, and *Mycobacterium luteum*) were sensitive; bacteriostatic zone of the test-culture ranged from 21 to 25 mm, and highly sensitive (*Proteus vulgaris* and *Aspergillus niger*) bacteriostatic zone exceeded 25 mm to probiotic bacteria of fermented product. TKG microbiota is also moderately sensitive to multiple antibiotics that allows defining the obtained fermented milk product as functional with therapeutic properties.

Moreover, during the study of the influence of different NaCl and bile and toxin on acid-activity of TKG it was found that active acid formation occurred at the concentrations up to 4% NaCl in cultivation medium (boiled milk) and at 20% bile and 0.45% phenol. It proves microbial association to be capable of withstanding adverse gastrointestinal conditions and continue developing.

Acid stability and biocidal ability of the investigated bioobject confirms that the association of "Tibetan fungus" to be capable of withstanding adverse gastrointestinal conditions and continue developing.

It can be concluded that UTKG can strong prospective for application for industrial production of probiotic milk products.

1. Vichko O, Chervetsova V, Novikov V (2013) Microbiological characteristics of sour-milk feed supplements and their influence on intestinal micro-biocenosis of piglets. Res J. of Pharmaceutical, Biological and Chemical Sci 4:1404-1410.

2. Gao J, Gu F, Abdella N, Ruan H, He G (2012) Investigation on Culturable Microflora in Tibetan Kefir Grains from Different Areas of China. *Journal of Food Science* 77:425-433. doi: 10.1111/j.1750-3841.2012.02805.x
3. Prado M, Blandón L, Vandenberghe L, Rodrigues C, Castro G, Thomaz-Soccol V, Soccol C (2015) Milk kefir: composition, microbial cultures, biological activities, and related products. *Frontiers in Microbiology*, 6:1-10. doi: 10.3389/fmicb.2015.01177.
4. Jianzhong Z, Xiaoli L, Hanhu J, Mingsheng D (2009) Analysis of the microflora in Tibetan kefir grains using denaturing gradient gel electrophoresis. *Food Microbiol.* 26:770–775. doi:10.1016/j.fm.2009.04.009
5. Kabak B, and Dobson A (2011). An introduction to the traditional fermented foods and beverages of Turkey. *Crit. Rev. Food Sci. Nutr.* 51:248–260. doi: 10.1080/10408390903569640
6. Altay F, Karbancıoğlu-Güler F, Daskaya-Dikmen C, and Heperkan D (2013). Are view on traditional Turkish fermented non-alcoholic beverages: microbiota, fermentation process and quality characteristics. *Int. J.Food Microbiol.* 167:44–56.doi:10.1016/j.ijfoodmicro.2013.06.016