

Physicochemical and Microbiological Properties of Milk Jiaokou from Inner Mongolia: Incredible Diversity of Nutritional Ingredients

Wenli Liu*, Weiqin Li, Ling Huang, Dongzhi Li and Liqing Zhao
College of Chemical and Environmental Engineering, Shenzhen University, China

‘Milk Jiaokou’ is a traditional and handmade fermented milk product generally manufactured by herdsman in Inner Mongolia of China. Usually, it is made from cow, sheep, horse, or camel milk, individually. To date, this product is still used as a zesty dish for the herdsman’s groups in some Inner Mongolia regions. According to the history book, ‘Milk Jiaokou’ has abundant nutritional values and many physiological functions, but ‘Milk Jiaokou’ has not yet been deeply studied or commercially developed in China and other countries so that it is poorly understood. In order to further study ‘Milk Jiaokou’, its nutrient ingredients, chemical and physical properties and microbiology analysis were made using analysis experiment and plate count method in this study. The results revealed that their solid contents of ‘Milk Jiaokou’ from the herdsman of XinlinGol League; Lanqi, Tongliao city; and Turehot of Chifeng respectively were high, $90.36\pm 0.65\text{g}/100\text{g}$, $92.21\pm 0.28\text{g}/100\text{g}$, $90.24\pm 0.08\text{g}/100\text{g}$, and $92.18\pm 0.38\text{g}/100\text{g}$ respectively. The pH values were acidic, 3.25 ± 0.01 , 3.68 ± 0.01 , 4.31 ± 0.01 , 3.82 ± 0.01 , sequentially. The protein contents were a little low, 1.76%, 2.10%, 1.53%, and 1.98%, respectively. The total sugar contents were 55mg/g, 39.9mg/g, 52.9mg/g and 70mg/g. Amino acids were abundant, their total amino acid content were 1.59g/100g (wherein Asp, Glu, Val, Leu, Phe and Lys were important amino acid), 1.31g/100g (wherein Asp, Glu, Val, Leu, Phe and Lys were important amino acid), 1.51g/100g (wherein Asp, Glu, Pro, Val, Leu and Lys were important amino acid), and 1.51g/100g (Glu, Pro and Leu were important amino acid), respectively. The ‘Milk Jiaokou’ had abundant microbiological resources which were mostly comprised of *Lactobacillus*, acetic acid bacteria, yeast, and more. Similarly, the range of the total bacterial counts was from $7.04\text{E}+07\pm 0.01\text{E}+07$ to $8.45\text{E}+07\pm 0.21\text{E}+07$. The colony forming units (CFU) of *Lactobacillus* in each sample were $1.55\text{E}+05\pm 0.15\text{E}+05$, $1.70\text{E}+05\pm 0.10\text{E}+05$, $2.35\text{E}+05\pm 0.35\text{E}+05$, and $2.30\text{E}+05\pm 0.50\text{E}+05$. The CFU for the acetic acid bacteria were $1.85\text{E}+06\pm 0.11\text{E}+06$, $1.66\text{E}+06\pm 0.10\text{E}+06$, $1.72\text{E}+06\pm 0.12\text{E}+06$, and $1.86\text{E}+06\pm 0.23\text{E}+06$, respectively. The CFU for yeast were $1.03\text{E}+07\pm 0.03\text{E}+07$, $7.73\text{E}+06\pm 0.37\text{E}+06$, $7.72\text{E}+06\pm 0.23\text{E}+06$, and $9.58\text{E}+06\pm 1.99\text{E}+06$, respectively. In conclusion, ‘Milk Jiaokou’ had abundant nutritional values and good physical and chemical properties, which will establish the basis for deeply development of its physiological functions.

Keywords: Milk Jiaokou; physicochemical properties; nutrient ingredients; microbiological diversity.