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## ISOLATION OF WHEY PROTEIN FROM MARE'S MILK

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Lactoferrin is an iron-binding protein of the transferrins family, which plays multifunctional roles in the formation of the innate immune system. It has been suggested that the antimicrobial activity of this protein is due to its iron-binding properties, but the exact role of lactoferrin in iron binding in milk is unknown. In the last thirty years, research has discovered several milk proteins and related peptides with interesting antimicrobial properties, particularly lactoferrin, which protects against microbial pathogens, and its antibacterial activity has already been well-described. With the steady increase in the number of multidrug-resistant pathogens, many researchers are looking to alternative medicine instead of classical antibiotics. In this search for novel antimicrobial agents for the future, lactoferrin, a multifunctional protein that participates in a range of essential physiological processes, offers a new source with potential pharmaceutical applications. However, in Kazakhstan, the research on isolation and purification of lactoferrin from mare's milk has not been studying adequately. The purpose of this study was to isolate and purify the lactoferrin of whey mare's milk by using gel filtration. SDS-PAGE was used to check the level of purity of the lactoferrin enriched fractions.

The single chemical composition of mare milk, rich in whey proteins is similar to human milk. Lactoferrin is one of the important compounds contained in whey protein fraction, and has multiple biological functions such as antimicrobial and activation of human and animal's immune system. Due to its strong antimicrobial activity, lactoferrin has potential pharmaceutical applications. The present given work mainly focused on the isolation and purification of the lactoferrin from mare's milk. Gel filtration chromatography has been widely used in the purification of whey proteins. Sephadex G-100 gel filtration chromatography was effective in isolating the major whey protein. First, the lactoferrin from Kazakh mare milk has been purified by gel filtration Sephadex G-100 chromatography in two steps. The column of Sephadex G-100 was eluted with 0.01 M sodium phosphate buffer (pH 6.8). Lactoferrin enriched fractions were detected by using UV absorbance at 280 nm and were identified in the first peak among three peaks in the both steps. Second, the purity of lactoferrin was checked by using 12% SDS-PAGE and the molecular weight of lactoferrin (in the range of 80-82 kDa) was estimated using protein standard.

The results of the present study showed the effectiveness of gel filtration chromatography in isolating single band lactoferrin from mare's whey.

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