## عنوان مقاله:

Investigating the effect of lactoferrin loaded on chitosan againstStaphylococcus aureus

## محل انتشار:

اولین همایش منطقه ای دستاوردهای نوین و پژوهشهای دانش بنیان در میکروبیولوژی و بیوتکنولوژی (سال: 1401)

تعداد صفحات اصل مقاله: 1

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## خلاصه مقاله:

Background and Objective: Increasing the resistance of bacterial strains to antimicrobial compounds isvery important all over the world. Staphylococcus aureus is one of the most important antibiotic-resistantbacteria that can cause skin, respiratory tract, and ۱۰% bacteremia (blood infection). Basedon this, several studies have been conducted on different natural compounds that have antimicrobialproperties. Chitosan is a non-toxic, biocompatible, and active cationic polymer derived from glucanwith repeating chitin units. This natural mucopolysaccharide composition can prevent the growth ofbacteria. Also, lactoferrin is an iron-containing protein in milk that has antimicrobial, antiviral, anticancer,anti-inflammatory, and good antioxidant properties. The Antimicrobial mechanism of lactoferrinagainst gram-positive bacteria can be due to its interaction with lipoteichoic acid and reduction ofnegative charge in the cell membrane. As a result, creating a hole in the membrane causes lysozyme toaccess peptidoglycan and kill the bacteria. Therefore, according to the antimicrobial properties of thetwo mentioned compounds, the aim of this study is to investigate the effect of camel milk lactoferrinand chitosan against Staphylococcus aureus (ATCC۲۵۹۲۳).methods: In this research, after removing casein by ion exchange chromatography, CMSephadex C-۵۰ was used to purify lactoferrin from camel milk. In order to confirm the purificationstep, SDS-PAGE methods and the absence of color in the presence of tetramethylbenzidine were used.Then, by dialysis method in the presence of ۱۰ mM ammonium phosphate, the obtained product wasconcentrated and the desired concentrations were prepared. In the next step, ۱% chitosan with mediummolecular weight was prepared with sterile distilled water and used after pH adjustment. Finally, theloading step of purified lactoferrin on chitosan was performed using TPP (thiamine pyrophosphate).To investigate the antimicrobial effect of lactoferrin (two concentrations of ۳۰۰ and ۳۵۰ µg/ml) loadedon ۱% chitosan, the microassay method was used along with positive and negative controls.Findings: The results show that in the presence of a concentration of ۳۰۰ µg/ml of lactoferrin loadedon chitosan, a significant decrease (P-value < ۰.۰۱) in the growth of Staphylococcus aureus wasobserved compared to the control group. Also, a significant decrease (P-value < ۰.۰۰۱) was reportedafter the treatment of bacteria with a concentration of ۳۵۰ µg/ml loaded lactoferrin.Conclusion: According to ... the obtained findings, it can be concluded that by loading lactoferri

## کلمات کلیدی:

Antimicrobial properties, Chitosan, Lactoferrin, Loading, Staphylococcus aureus