

Accepted Manuscript

Title: Preparation and properties of gum arabic cross-link binding nisin microparticles

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PII: S0144-8617(18)30634-9
DOI: <https://doi.org/10.1016/j.carbpol.2018.05.080>
Reference: CARP 13662

To appear in:

Received date: 18-1-2018
Revised date: 25-5-2018
Accepted date: 27-5-2018

Please cite this article as: Gong, Feng., Qian, Junqing., Chen, Yan., Yao, Shen., Tong, Jun., & Guo, Hui., Preparation and properties of gum arabic cross-link binding nisin microparticles. *Carbohydrate Polymers* (2018), <https://doi.org/10.1016/j.carbpol.2018.05.080>

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Preparation and properties of gum arabic cross-link binding nisin microparticles

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Highlights

- The negatively-charged natural polysaccharide gum arabic cross-link with nisin, forming GA-nisin particles and increasing nisin stability.
- Through Zeta potential, FT-IR spectroscopy, and scanning electron microscope characterization, it was confirmed that GA and nisin were cross-linked and the combination is consistent with monolayer adsorption.
- The antibacterial stability of GA-nisin particles is significantly better than nisin under high temperature, and the sustained antibacterial effect is also longer than that of nisin.

Abstract

Nisin is a small cationic peptide composed of 34 amino acid residues, it exhibits a wide spectrum antimicrobial activity against Gram-positive bacteria, but nisin has the disadvantages of poor stability and short duration of antibacterial activity. In order to improve the stability of nisin during food processing and storage period, the gum arabic (GA) is used to get GA-nisin microparticles. The analysis of zeta potential, SEM and FT-IR were used to characterize the combination of GA and nisin, test the antibacterial activity on *Staphylococcus aureus* and *Escherichia coli*, the bactericidal effect of GA-nisin microparticles decreased within 24 hours compare to free nisin,

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