

عنوان مقاله:

Comparative Antimicrobial Efficacy, Kinetic Destruction Pattern and Microbial Inactivation Dynamics of Extracted Cinnamon Essential Oil and Commercial Cinnamaldehyde against Foodborne Pathogens

محل انتشار:

فصلنامه میکروبی شناسی پزشکی ایران، دوره 17، شماره 2 (سال: 1401)

تعداد صفحات اصل مقاله: 13

نویسندگان:

Tohura Ahmed Suchi - *Department of Microbiology, University of Dhaka, Dhaka, Bangladesh*

Israt Dilruba Mishu - *Department of Microbiology, University of Dhaka, Dhaka, Bangladesh*

Marufa Zerine Akhter - *Department of Microbiology, University of Dhaka, Dhaka, Bangladesh*

Md. Mahfuzul Hoque - *Department of Microbiology, University of Dhaka, Dhaka, Bangladesh*

خلاصه مقاله:

Background and Aim: The increasing demand for the discovery of next-generation antimicrobials necessitates the use of plant extracts as alternatives. This study investigates the antibacterial efficacy of extracted cinnamon essential oil (CEO) and commercial cinnamaldehyde (CN) against foodborne pathogens. **Materials and Methods:** Kirby-Bauer disc diffusion method was used to screen the antimicrobial potency of CEO and CN. MIC and MBC were determined by the broth microdilution method. Kinetic destruction pattern was studied by time killing assay. CEO and CN mediated inactivation dynamics of *S. typhimurium* (ALM۴۰) and *L. monocytogenes* were studied on the ground chicken meat model. **Results:** Both CEO and CN showed remarkable antimicrobial efficacy against the test strains, with highest and lowest efficacy against *V. metschnikovii* and *E. coli*, respectively. The agents inhibited gram-positive and negative bacteria equally. CN showed higher efficacy than CEO although the results were very close. MIC of CEO and CN ranged from ۰.۶۲۵%-۵% (v/v) and ۰.۰۷۸%-۰.۳۱۲۵% (v/v), respectively. Heat treatment and pH alteration did not hamper the antibacterial potency of CEO. CEO and CN mediated destruction kinetics were faster in *L. monocytogenes* than *S. typhimurium* (ALM ۴۰). Inactivation dynamics study showed CEO and CN to have slightly dose-dependent antimicrobial effects. Besides, storage conditions and time did not reduce the antimicrobial potency. The significant microbial reduction was observed in both CEO and CN treated meat samples than untreated controls. Notably, a complete reduction of viable count in meat model was observed in selective medium just after ۲۴hrs storage. **Conclusion:** Both CEO and CN showed promising antimicrobial effects to be used in combating foodborne pathogens

کلمات کلیدی:

Cinnamon essential oil, Cinnamaldehyde, antimicrobial activity, foodborne pathogens
اسانس دارچین، سینامالدهید، فعالیت ضد میکروبی، پاتوژن های غذایی

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1690521>



