

ANTIMICROBIAL ACTIVITY OF MW PACVD +R MODIFIED DETONATION NANODIAMOND PARTICLES (DND)

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Introduction

Advances in nanotechnology have led to the development of many microbicidal nanoparticles with anti-biofilm effects. This is one of the applications of nanoparticles resulting from their properties. Nanoparticles can concentrate drugs on their surface, causing additional effects to improve their ability against bacteria. Nanodevices (NDs) are one of the most promising materials for biomedical applications. Our results can therefore be a step forward in the development of alternative antibiotic-based strategies aimed at bacterial infections.

Materials and Methods

In this article, we will explain the effect of modified detonation diamond powder (MOD-DND) in the MW-PACVD + R reactor on the viability of bacteria on Gram-positive (*Staphylococcus aureus*) and Gram-negative (*Escherichia coli*) bacteria.

Results and Discussion

We show that while MOD-DND particles are nontoxic to both pathogens, they show significant antibiophilic activity. The presence of MOD-DND particles reduces the formation of biofilm more efficiently than free menthol, unmodified oxidized NDs and ampicillin, a commonly used antibiotic.

Conclusions

The Introduction should introduce the background to the work that has been carried out. It should contain citations to the key literature to support this rationale and should lead to a clearly stated hypothesis or set of objectives.