



МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ  
СУМСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ  
КАФЕДРА ІНОЗЕМНИХ МОВ  
ЛІНГВІСТИЧНИЙ НАВЧАЛЬНО-МЕТОДИЧНИЙ ЦЕНТР

## **МАТЕРІАЛИ**

### **XIV ВСЕУКРАЇНСЬКОЇ НАУКОВО-ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ СТУДЕНТІВ, АСПІРАНТІВ ТА ВИКЛАДАЧІВ ЛІНГВІСТИЧНОГО НАВЧАЛЬНО-МЕТОДИЧНОГО ЦЕНТРУ КАФЕДРИ ІНОЗЕМНИХ МОВ**

**«TO MAKE THE WORLD SMARTER AND SAFER»**

26 березня 2020 року



Сумський державний університет  
(вул. Римського-Корсакова, 2, м. Суми, Сумська обл., 40007)

**Суми  
2020**

# INFLUENCE OF Ag NANOPARTICLES ON THE ANTIMICROBIAL ACTIVITY OF DENTAL COMPOSITES AGAINST *E. FAECALIS*

O. Pereshyvailo – Sumy State University, group АСІІmi-9.1  
S. Zolotova – E L Adviser

The results of treatment of odontological diseases are not always successful: 82% in the world, while in Ukraine only 50%. *Enterococcus faecalis* is the most common pathogen causing complications in dental procedures. This is due to its resistance to antibiotics and ability to form biofilms. The topical issue is finding alternative antimicrobials. Ag nanoparticles (Ag NPs) have shown high efficacy against many polyresistant strains.

**Objective:** To evaluate the antibacterial effect of Ag NPs on the clinical strain of *E. faecalis*.

**Materials and Methods:** Ag NPs with a concentration of 3000 g / L were used for the study. Clinical strain was obtained in the microbiological laboratory of Sumy State University. Antimicrobial activity of the Ag NPs against *E. faecalis* was evaluated using the serial dilution method and the minimum inhibitory concentration (MIC) was determined. Determination of the minimum bactericidal concentration (MBC) was carried out by direct seeding of the microorganism from liquid media into dense nutrients. The time killing clinical strain was evaluated by the number of bacteria at appropriate intervals. The impact of Ag NPs on biofilm was evaluated by determining the volume of biofilm formed by gentian violet staining.

**Results:** As a result of the MIC study the MBC, respectively, was 2.5 µg / ml. From 1 hour of exposure, the dynamics of dieback of the strain increased with each interval of time. Ag NPs inhibit the formation of biofilm in the early stages. The number of cells on 3-day biofilm decreased by 2-3 times, which indicates the high efficiency of Ag NPs.

**Conclusion:** The use of Ag NPs in dental practice is a promising trend because of its inhibitory effect on the formation and activity of bacterial films. The results obtained may serve as a basis for further development of commercial antiseptic agents.