MIRZO ULUG‘BEK NOMIDAGI
O‘ZBEKISTON MILLIY UNIVERSITETI
JIZZAX FILIALI



# "BIOTEXNOLOGIYANING RIVOJLANISH ISTIQBOLLARI VA MUAMMOLARI"

## MAVZUSIDAGI RESPUBLIKA MIQYOSIDAGI ILMIY-TEXNIK ANJUMAN TO‘PLAMI





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## RESPUBLIKA ILMIY ANJUMANINING TEZISLAR TO‘PLAMI

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**МИНИСТЕРСТВО ВЫСШЕГО ОБРАЗОВАНИЯ, НАУКИ И ИННОВАЦИЙ РЕСПУБЛИКИ УЗБЕКИСТАН**

**ДЖИЗАКСКИЙ ФИЛИАЛ НАЦИОНАЛЬНОГО УНИВЕРСИТЕТА УЗБЕКИСТАНА ИМЕНИ МИРЗО УЛУГБЕКА**

# СБОРНИК ТЕЗИСОВ РЕСПУБЛИКАНСКОЙ НАУЧНОЙ КОНФЕРЕНЦИИ

## «ПЕРСПЕКТИВЫ И ПРОБЛЕМЫ РАЗВИТИЯ БИОТЕХНОЛОГИЙ»

**28-29 марта 2025 г.**

**JIZZAX – 2025**

## 2-sho‘ba. TIBBIYOT VA FARMASEVTIK BIOTEXNOLOGIYA

# ANTIBIOTIC RESISTANCE PROFILES OF CARIOGENIC BACTERIA ISOLATED FROM THE ORAL CAVITIES OF UZBEK POPULATION

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**Annotation:**Based on information from the World Health Organization, almost 2 billion adults have permanent tooth decay, while 514 million children have primary tooth decay. Although several studies on caries in Uzbekistan, there is still a lack of evidence on the involvement of cariogenic microorganisms. This study isolated cariogenic bacteria from a middle-aged Uzbek population with caries and determined their antibiotic resistance profile.

**Keywords:** Caries**,** antibiotic resistance, Uzbek population, oral microbiome.

Staphylococci and Lactobacillus cause dental caries primarily through biofilm growth and acid generation [1]. During the illness process, antibiotics are absorbed directly through the mouth cavity and have an immediate influence on the oral microbiota [2]. As a result, there is a significant risk of caries repeating after therapy [3]. In an era of rising antibiotic resistance, the response of cariogenic bacteria to antibiotics is critical [4]. In this investigation, samples were collected from 50 middle-aged Uzbeks who went to the dentist with caries concerns. The materials were cultivated on De Man-Rogosa-Sharpe agar (TM MEDIA, India), Mueller Hinton Agar (HIMEDIA, India), Bifidobacterium Agar (HIMEDIA, India), and various kinds of additional nutritional media using classic microbiological procedures. Bruker MALDI-TOF MS (Bruker, Germany) identified some of the isolates as cariogenic infections. The identified pathogens were tested for activity against the antibiotics Kanamycin 30 µg/disc, Chloramphenicol 30 µg/disc, Ampicillin 2 µg/disc, Cefazolin 30 µg/disc, Cefoperazone/Sulbactum 75/10 µg/disc, Ceftriaxone 30 µg/disc, Gentamicin 10 µg/disc, Levofloxacin 5 µg/disc, Amoxyclav 30 µg/disc, Azithromycin 15 µg/disc, Penicillin G 10 units, Amoxicillin 25 µg/disc, Clindamycin 2 µg/disc, Tetracycline

30 μg/disc (all from HIMEDIA, India) by the disk diffusion method. The activity zones were measured, and the activity zones of the pathogens were compared.

As a result of bacteriological cultivation, about 200 isolates are isolated, and each bacterium is given a morphological classification based on its colony structure and microscopic appearance. After identification, cariogenic bacterial strains such as S. *mutans*, *S. anginosus*, *L. fermentum*, *L. rhamnosus*, and *L. salivarius* were identified among the isolates. According to the results of the disc diffusion test, *S. mutans* was found to be resistant to Ampicillin, Penicillin G, Clindamycin, *L. salivarius* to Penicillin G, *L. fermentum* to Tetracycline, Levofloxacin, Gentamicin and Kanamycin. *S. anginosus* and *L. rhamnosus* showed different levels of sensitivity to these antibiotics.

The resistance of cariogenic bacteria, which are the primary cause of dental caries, to antibiotics has been shown to increase the risk of patients developing caries again after treatment. In particular, the antibiotic resistance of Broad-Spectrum Penicillin, which is commonly used in caries, indicates that their use should be reconsidered or alternative methods such as fluoride, xylitol compounds, and short-chain peptides should be developed for use during caries treatment.

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