

# TEXTILE MATERIALS WITH ANTIMICROBIAL PHOTODYNAMIC ACTIVITY

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In recent years, the resistance of bacteria to the antibiotics used in clinical practice has increased to dangerously high levels in many parts of the world. New mechanisms of resistance have emerged and spread, leading to the inability to treat common infectious diseases since the antibiotics administered are becoming less effective. That necessitates the search for new compounds with good antimicrobial activity as well as inventing new strategies for their usage.

Antimicrobial photodynamic therapy is a new method for inactivating a wide range of microorganisms that are highly resistant to antimicrobial substances used in practice. The method uses special compounds, called photosensitizers (PS), which during the irradiation with sunlight in the presence of molecular oxygen (O<sub>2</sub>) generate highly cytotoxic reactive oxygen species (ROS) and in particular singlet oxygen (1O<sub>2</sub>), that reacts with the cytoplasmic membrane and the cell walls of microorganisms, thus inactivating them, hence eliminating the possibility of photoresist strains occurrence.

This work describes the use of different PS deposited on textile materials and their antibacterial activity in the dark and under sunlight exposure against Gram-positive and Gram-negative bacteria. The light sources used are also the focus of the present presentation.

**Keywords:** *textile, antimicrobial, photodynamic therapy, photosensitizers*

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