

ABSTRACT

*The use of plasma and Zinc Oxide (ZnO) particle applications can be used as an option in the processing of improving the quality and perfecting textile modifications. The purpose of this study was to obtain antibacterial cotton fabrics by treating Zinc Oxide particles after preparation through the application of positive corona plasma. Preparation of particle coating on cotton fabrics was carried out by applying positive corona plasma using point-plane electrodes and varying electrode distances of 1 cm, 1.5 cm, and 1.9 cm. Plasma application was carried out continuously with a time variation of 5-30 minutes. ZnO particle coating was carried out by immersing the prepared fabric in a zinc oxide particle suspension with a concentration of 2% for 15 minutes. Plasma formation was tested by characterizing the relationship between current and voltage. The fabric absorption ability was carried out by drop testing and measuring the absorption time. The antibacterial properties of the fabric were tested by the disc diffusion method against gram-positive bacteria *Staphylococcus aureus*. This study showed that a larger electrode distance requires a greater voltage for plasma generation. Absorption time testing showed that the longer the radiation time and the closer the distance between the electrodes, the shorter the fabric absorption time. Plasma treatment and ZnO particle coating were proven to increase the antibacterial properties of cotton fabric, as evidenced by the formation of an inhibition zone of 3.30 - 4.90 mm in testing against the gram-positive bacteria *Staphylococcus aureus*.*

Keywords : *Positive Corona Discharge, Point-Plane Electrode, Cotton Cloth, Zinc Oxide, Gram-Positive Bacteria, Antibacterial*