

Bio-Nano Mask: Antivirus and Antimicrobial Mouth Mask Coating with Nano-TiO₂ and Anthocyanin Utilization as an Effective Solution of High ARI Patients in Riau

Authors : Annisa Ulfah Pristya, Andi Setiawan

Abstract : Indonesia placed in sixth rank total Acute Respiratory Infection (ARI) patient in the world and Riau as one of the province with the highest number of people with respiratory infection in Indonesia reached 37 thousand people. Usually society using a mask as prevention action. Unfortunately the commercial mouth mask only can work maximum for 4 hours and the pores are too large to filter out microorganisms and viruses carried by infectious droplets nucleated 1-5 μm . On the other hand, Indonesia is rich with Titanium dioxide (TiO₂) and purple sweet potato anthocyanin pigment. Therefore, offered Bio-nano-mask which is a antimicrobial and antiviral mouth mask with Nano-TiO₂ coating and purple sweet potato anthocyanins utilization as an effective solution to high ARI patients in Riau, which has the advantage of the mask surface can't be attached by infectious droplets, self-cleaning and have anthocyanins biosensors that give visual response can be understood easily by the general public in the form of a mask color change from blue/purple to pink when acid levels increase. Acid level is an indicator of microorganisms accumulation in the mouth and surrounding areas. Bio-nano mask making process begins with the preparation (design, Nano-TiO₂ liquid preparation, anthocyanins biosensors manufacture) and then superimposing the Nano-TiO₂ on the outer surface of spunbond color using a sprayer, then superimposing anthocyanins biosensors film on the Meltdown surface, making bio nano-mask and it pack. Bio-nano mask has the advantage is effectively preventing pathogenic microorganisms and infectious droplets and has accumulated indicator microorganisms that color changes which easily observed by the common people though.

Keywords : anthocyanins, ARI, nano-TiO₂ liquid, self cleaning

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