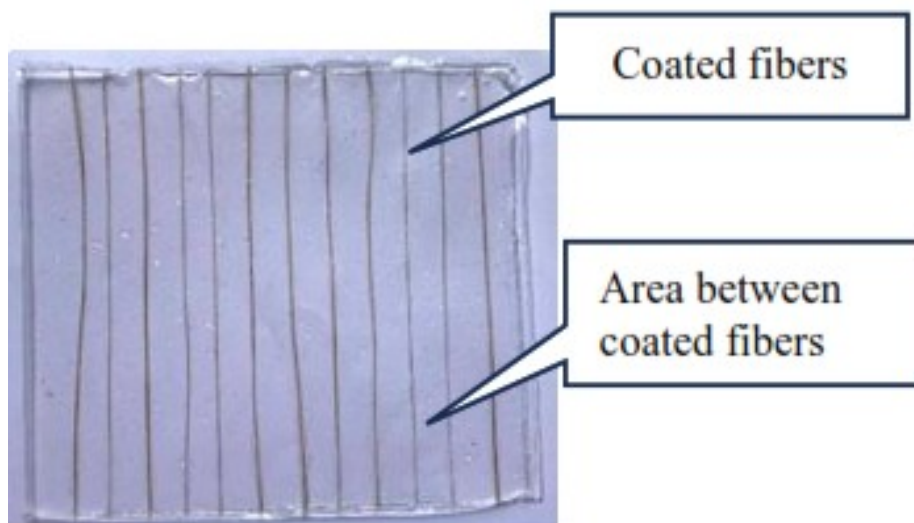
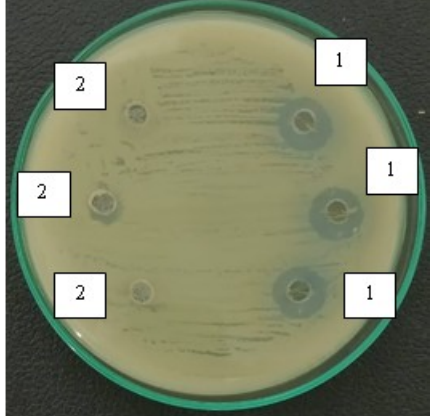
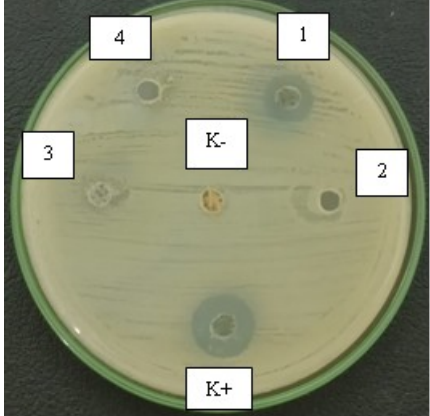
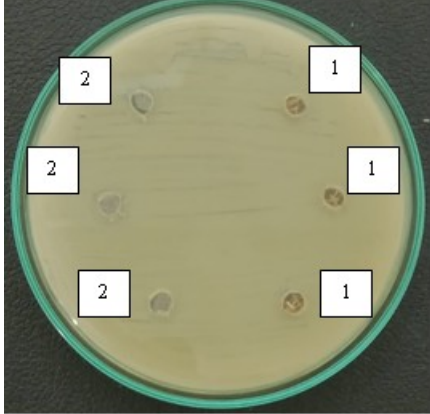
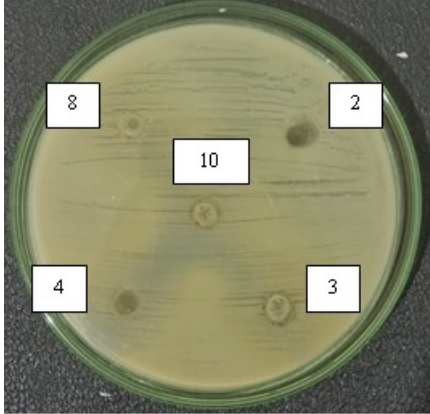


Supplement material-1. Microscope images (100 x magnification) of the cross-sectional abaca fibers (a) before coating with PVA & after coating with (b) 1% PVA, (c) 5% PVA, and (d) 10% PVA



Supplement material-2. Samples taken for antibacterial properties

	
<p>1: Coated fiber (PVA-AF-Cu_{nano}) 2: Sampled BCF (T40/P60/G-Cu_{nano})</p>	<p>1 = Coated fiber (PVA-AF-Cu_{nano}) 2 = PVA Biofilm only (control) 3 = Sampled BCF (T40/P60/G-Cu_{nano}) 4 = PVA Biofilm + Glycerol (control) K- = AF only (negative control) K+ = PVA-AF-Cu_{fine-powder} (positive control)</p>
	
<p>1 = PVA-AF+ Chitosan (control) 2 = Sampled BCF between PVA-AF+ Chitosan (control)</p>	<p>2 = PVA Biofilm (control) 3 = Sampled BCF between Coated fiber (PVA-AF-Cu_{nano}) 4 = PVA Biofilm + Gliserol (control) 8 = Sampled BCF between Coated fiber (PVA-AF-Cu_{nano})+ Chitosan 10 = Sampled BCF between PVA-AF+ Chitosan (control)</p>
<p>Supplement material-3. Representative images of bacterial inhibition zones of BCF and the controls</p>	